



SAN DIEGO AREA

**REGIONAL
STANDARD
DRAWINGS**

STANDARD DRAWINGS FOR AGENCIES IN THE SAN DIEGO REGION

**Recommended by the Regional Standards Committee
Maintained and Published by the San Diego County
Department of Public Works.
March, 1997**



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AMERICAN PUBLIC WORKS ASSOCIATION
ASSOCIATED GENERAL CONTRACTORS OF AMERICA
BUILDING INDUSTRY ASSOCIATION
CALIF. COUNCIL OF CIVIL ENGINEERS & LAND SURVEYORS
ESCONDIDO, CITY OF
VISTA, CITY OF
SAN DIEGO, CITY OF
DEL MAR, CITY OF
EL CAJON, CITY OF
ENCINITAS, CITY OF

ENGINEERING & GENERAL CONTRACTORS ASSOCIATION
ESCONDIDO, CITY OF
HELIIX WATER DISTRICT
IMPERIAL BEACH, CITY OF
LA MESA, CITY OF
LEMON GROVE, CITY OF
NATIONAL CITY, CITY OF
OCEANSIDE, CITY OF
OTAY MUNICIPAL WATER DISTRICT
PACIFIC BELL COMPANY

POWAY, CITY OF
SAN DIEGO, CITY OF
SAN DIEGO, COUNTY OF
SAN DIEGO COUNTY ROCK PRODUCERS ASSOCIATION
SAN DIEGO GAS & ELECTRIC COMPANY
SAN MARCOS, CITY OF
SANTEE, CITY OF
SOLANA BEACH, CITY OF
VISTA, CITY OF

Regional Standards Committee

January 1997

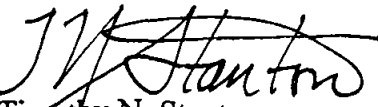
These standard drawings have been adopted by the San Diego Regional Standards Committee for the benefit of all agencies in the San Diego area. The Regional Standards Committee membership is comprised of the County's sixteen cities, the County of San Diego, various representative districts and private industry organizations, the Pacific Telephone Company and the San Diego Gas and Electric Company as named above. The San Diego County Department of Public Works is currently providing coordination and staff support for the Regional Standards Committee.

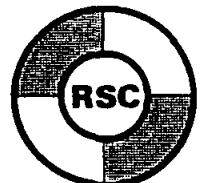
REVISIONS

The San Diego Regional Standards Committee will continuously accept proposed revisions and/or proposed new standard drawings for review. They should be submitted to the Regional Standards staff at the Department of Public Works, County of San Diego 5555 Overland Avenue, San Diego, CA 92123, Attention: Design Engineering Section MS 0340. Should the proposed revision be very minor in nature, i.e., a grammatical error, etc., the staff will make the necessary change without taking it to the Committee. Once enough proposals have been submitted to warrant a Regional Standards Committee meeting, the staff will prepare an agenda and schedule a meeting. A blank submittal form is included after this page.

At the meeting the Committee will take one of three possible actions: approve the change, reject the change or recommend that a subcommittee further study of the change and make recommendations to the Committee. The individual or organization who submitted the change will then be notified of the Committee action. After approval of the proposed change by the Regional Standard Committee the staff will print and distribute the change to the government agencies within the San Diego County.

It is intended that the standard drawing package will be reprinted and distributed periodically incorporating all the changes approved by the Regional Standards Committee since the last printing. The reprinting will take place when the Regional Standards Committee determines enough revisions have been approved to warrant issuance of an updated drawing package. It is further intended that the Regional Standards be accepted by all agencies at the earliest possible time.


Timothy N. Stanton
Chairman, Regional Standard Committee



REVISION FOR REGIONAL STANDARDS☐ SPECIFICATION☐ DRAWING

DRAFT NO. _____

DATE _____

SUBMITTED BY:

NAME _____ PHONE _____

AGENCY _____

ADDRESS _____

SUBCOMMITTEE ACTION

ON _____

☐ RECOMMENDED ☐ AS MODIFIED ☐ REJECTED**REGIONAL COMMITTEE ACTION**

ON _____

☐ RECOMMENDED ☐ AS MODIFIED ☐ REJECTED

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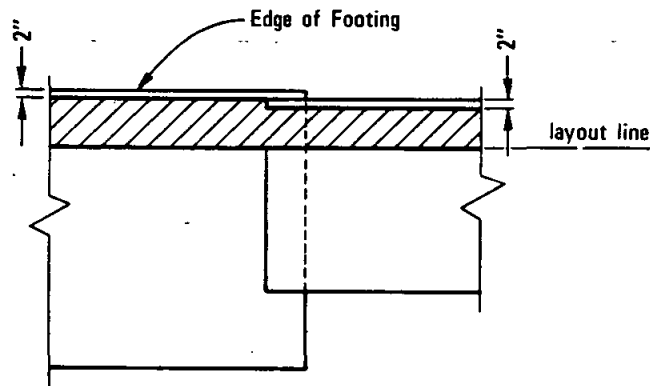
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CONCRETE STRUCTURES

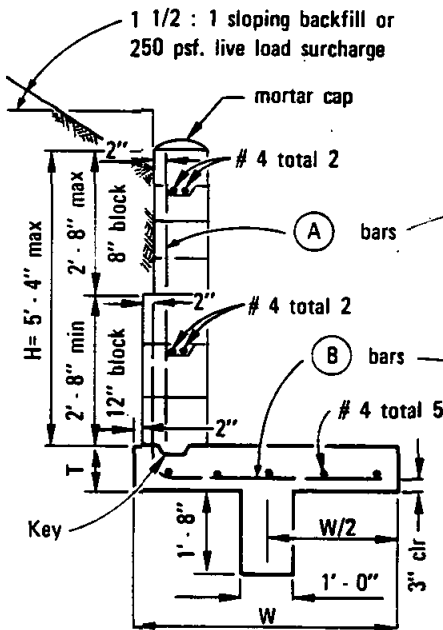
CONCRETE STRUCTURES

C

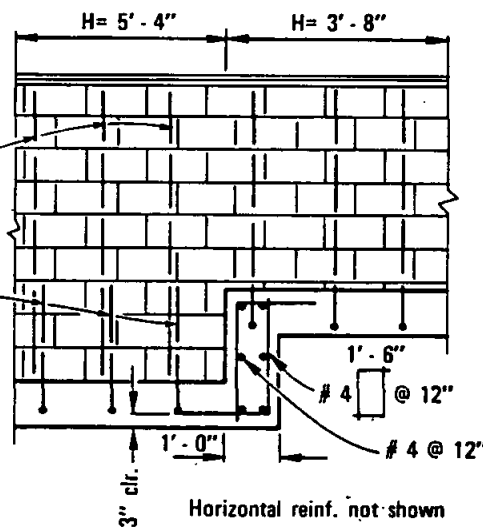
DRAWING **C-1**
NUMBER



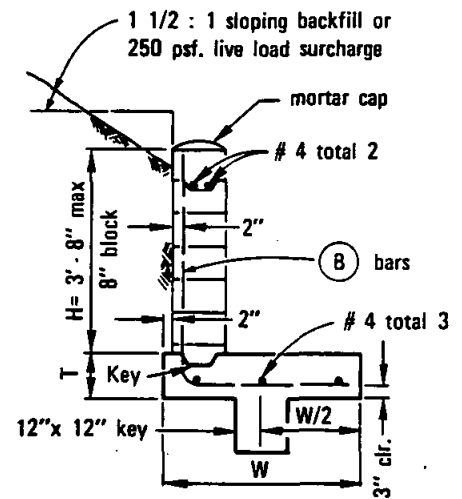
PLAN



TYPICAL SECTION
over 3' - 8"



ELEVATION



TYPICAL SECTION
3' - 8" max.

NOTES

1. See Standard Drawings C-7 and C-8 for additional notes and details.
2. Fill all block cells with grout.

DIMENSIONS AND REINFORCING STEEL		
H (max)	5' - 4"	3' - 8"
T (min)	0' - 10"	0' - 10"
W (min)	5' - 0"	3' - 9"
(A) bars	# 4 @ 16"	—
(B) bars	# 6 @ 16"	# 4 @ 16"
max. toe press. (psf)	700	550

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen D. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **C-2**

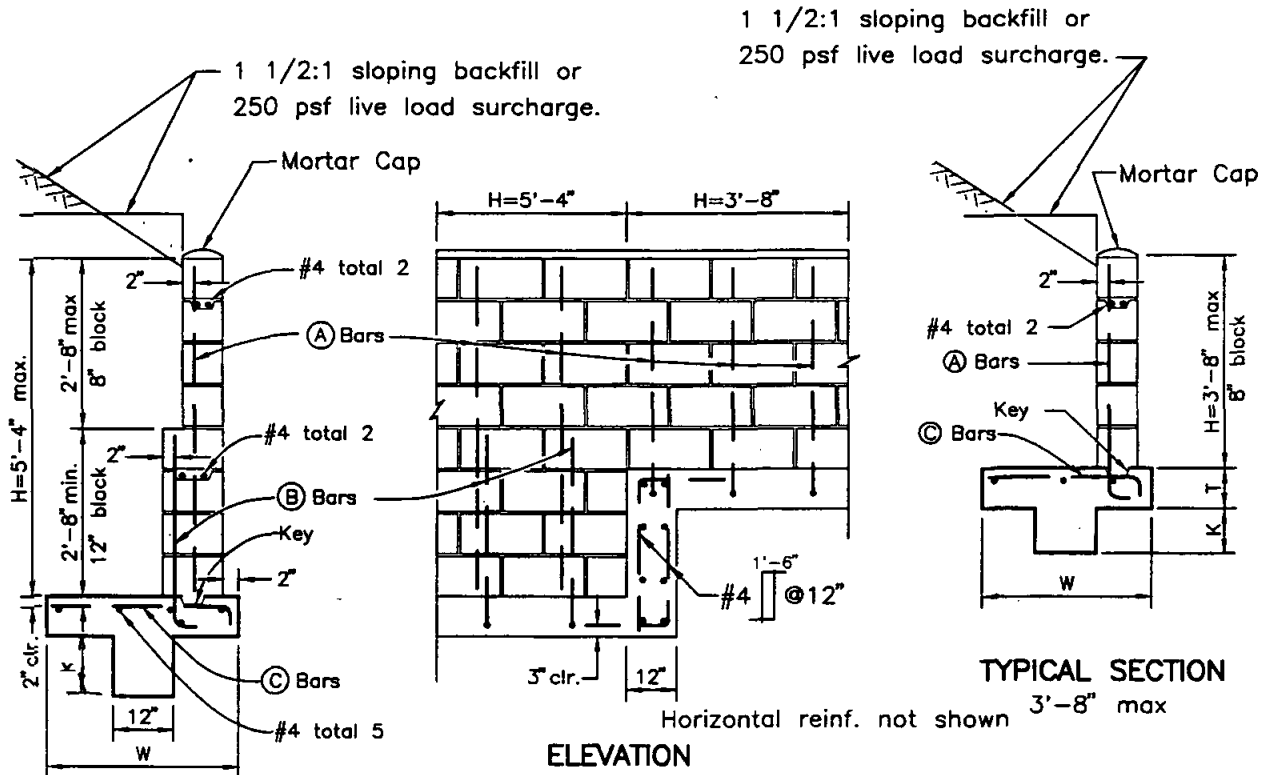
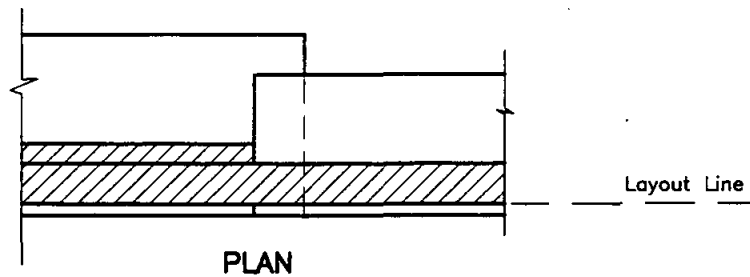
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 2
(LIVE LOAD SURCHARGE OR SLOPING BACKFILL)

Revision	By	Approved	Date
REINST.	SC	A.H.	8-88

The image contains three technical drawings of a wall structure, showing reinforcement details.

- Left Drawing: TYPICAL SECTION over 5' - 4"**
 - Shows a vertical cross-section of a wall.
 - Labels include: mortar cap, # 4 total 2 (A) bars, (B) bars, (C) bars, # 4 total 2 (D) bars, (E) bars, key, W, 2" clr., T, 2' - 8" min, 12" block, 2" - 8" max, 5' - 4" max, 8" block, H = 8' - 0" max.
- Middle Drawing: ELEVATION**
 - Shows a horizontal cross-section of a wall.
 - Labels include: H = 8' - 0", H = 5' - 4", H = 3' - 8", 22", 32", 16", 16", 10", 3" clr., 1' - 6", # 4 @ 12", # 4 @ 12", 3" clr., Horizontal reinf. not shown.
- Right Drawing: TYPICAL SECTION 5' - 4" max**
 - Shows a vertical cross-section of a wall.
 - Labels include: mortar cap, # 4 total 2 (A) bars, (B) bars, (D) bars, (E) bars, key, W, 3" clr., T, H = 5' - 4" max, 8" block, 2", 2".



NOTES

1. See Standard Drawings C-7 and C-8 for additional notes and details.
2. Fill all block cells with grout.

DIMENSIONS AND REINFORCING STEEL				
H (max)	5'-4"	3'-8"		
T (min)	0'-10"	0'-8"		
W (min)	4'-0"	3'-0"		
(A) Bars	#4@16"	#4@16"		
(B) Bars	#6@16"			
Surcharge	sloping	live load	sloping	live load
(C) Bars	#6@8"	#6@16"	#6@16"	#6@16"
K (min)	1'-0"	0'-8"	1'-0"	0'-8"
Toe Press.	2700 psf	1900 psf	1700 psf	1430 psf

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARD COMMITTEE

Chairman R.C.E. 25902 Date

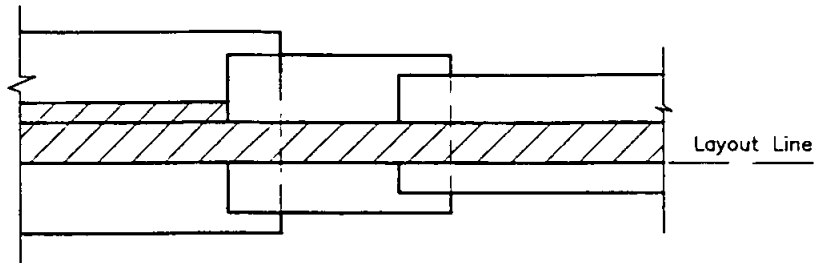
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 4 (Live Load Surcharge or Sloping Backfill)

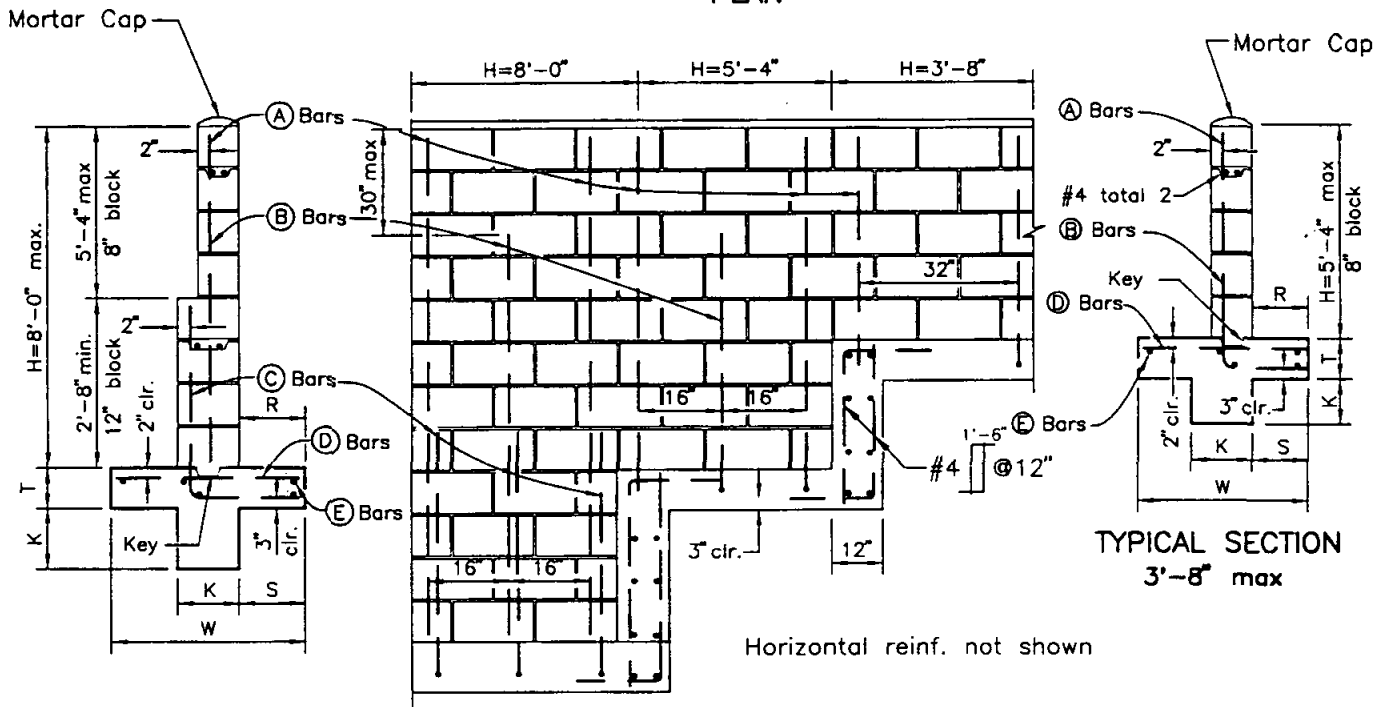
DRAWING
NUMBER

C-4

Revision	By	Approved	Date
Text	OK	A. H. H. H.	2-95



PLAN



TYPICAL SECTION
over 5'-4"

ELEVATION

TYPICAL SECTION
3'-8" max

Horizontal reinf. not shown

NOTES

1. See Standard Drawings C-7 and C-8 for additional notes and details.
2. Fill all block cells with grout.

DIMENSIONS AND REINFORCING STEEL

	3'-8"	5'-4"	8'-0"
H (max)	3'-8"	5'-4"	8'-0"
T (min)	0'-8"	0'-10"	1'-0"
W (min)	2'-1"	3'-1"	4'-3"
R ₁	0'-9"	1'-2"	1'-5"
S	0'-8 1/2"	1'-1 1/2"	1'-7 1/2"
K	0'-8"	0'-8"	1'-0"
(A) Bars	#4@32"	#4@32"	#4@32"
(B) Bars	—	#4@32"	#4@32"
(C) Bars	—	—	#7@16"
(D) Bars	#4@32"	#4@16"	#4@16"
(E) Bars	#4 total 5	#4 total 5	#4 total 6
Max. Toe Press. (psf)	774	1,030	1,660

Revision	By	Approved	Date
Text	OM	O. M. H. 2-95	

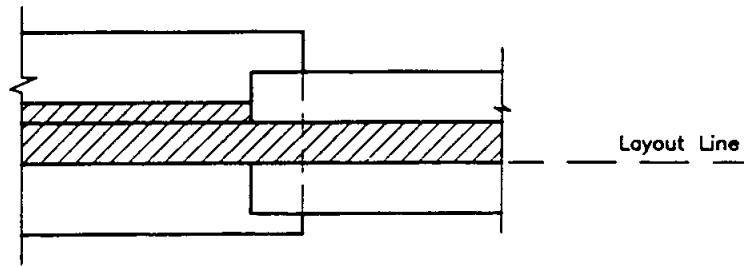
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 5
(Level Backfill)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARD COMMITTEE

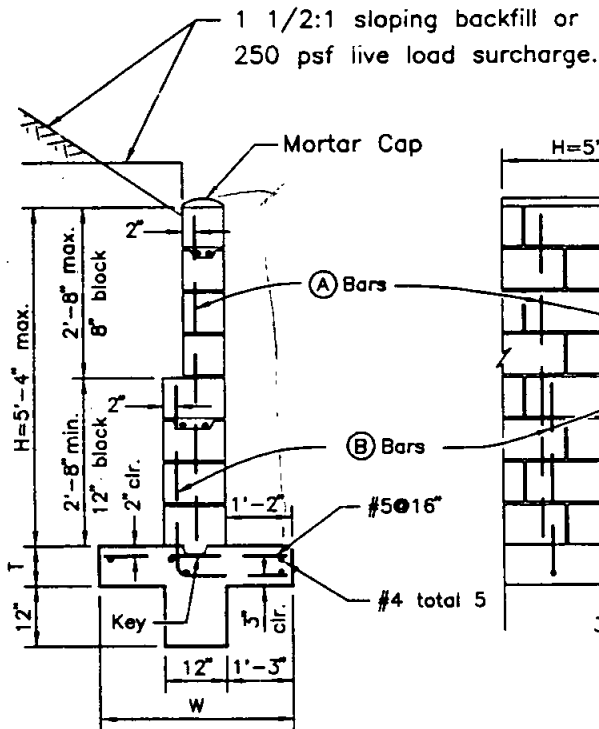
George P. 2-95
Chairman R.C.E. 25902 Date

DRAWING
NUMBER C-5

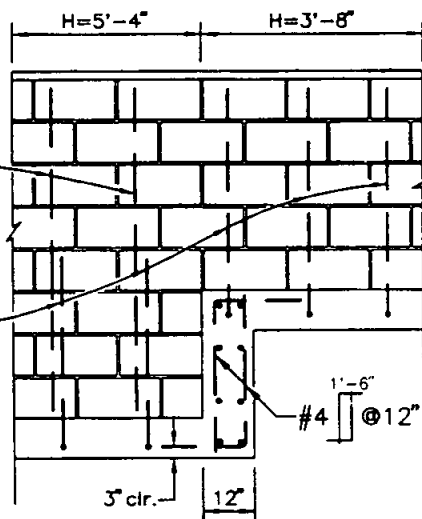


PLAN

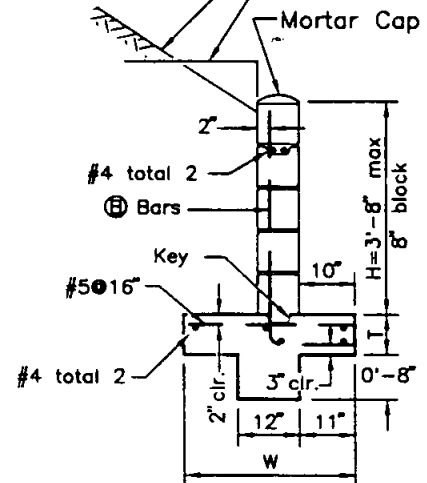
1 1/2:1 sloping backfill or
250 psf live load surcharge.



TYPICAL SECTION
over 3'-8"



ELEVATION



TYPICAL SECTION
3'-8" max

Horizontal reinf. not shown

NOTES

1. See Standard Drawings C-7 and C-8 for additional notes and details.
2. Fill all block cells with grout.

DIMENSIONS AND REINFORCING STEEL		
H (max)	5'-4"	3'-8"
T (min)	0'-10"	0'-8"
W (min)	3'-10"	2'-9"
(A) Bars	#4@16"	—
(B) Bars	#6@16"	#4@16"
Max. Toe Press. (psf)	2,000	1,400

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAWING

Chairman R.C.E. 25902 Date

MASONRY RETAINING WALL TYPE 6
(Live Load Surcharge or Sloping Backfill)

DRAWING
NUMBER C-6

Revision By Approved Date
Text 01 O. H. H. 2-95

Walls are to be used for the loading conditions shown for each type wall. Design H shall not be exceeded. Footing key is required except as shown otherwise or when found unnecessary by the Engineer. Special footing design is required where foundation material is incapable of supporting toe pressure listed in table.

Reinforced Concrete:

$$\begin{array}{ll} F_c = 1200 \text{ psi} & F'_c = 3000 \text{ psi} \\ F_s = 20,000 \text{ psi} & n = 10 \end{array}$$

$F_m = 600 \text{ psi}$ $F_m = 200 \text{ psi}$
 $F_s = 20,000 \text{ psi}$ $n = 50$
 Earth = 120 pcf and Equivalent Fluid Pressure = 36 psf
 per foot of height. Walls shown for 1½:1 unlimited
 sloping surcharge are designed in accordance with
 Rankine's formula for unlimited sloping surcharge with
 $\alpha = 33^\circ 42'$

Intermediate grade, hard grade, or rail steel deformation shall conform to ASTM A615, A616, A617. Bars shall lap 40 diameters, where spliced, unless otherwise shown on the plans. Bends shall conform to the Manual of Standard Practice, A.C.I. Backing for hooks is four diameters. All bar embeddings are clear distances to outside of bar. Spacing for parallel bars is center to center of bars.

All reinforced masonry retaining walls shall be constructed of regular or light weight standard units conforming to the "Standard Specifications for Public Works Construction."

Vertical control joints shall be placed at 32 foot intervals maximum. Joints shall be designed to resist shear and other lateral forces while permitting longitudinal movement. Vertical expansion joints shall be placed at 96 foot intervals maximum.

Footing concrete shall be 560-C-3250, using 8 aggregate when placing conditions permit.

No backfill material shall be placed against masonry retaining walls until grout has reached design strength or until grout has cured for a minimum of 28 days. Compaction of backfill material by jetting or ponding with water will not be permitted. Each layer of backfill shall be moistened as directed by the Engineer and thoroughly tamped, rolled or otherwise compacted until the relative compaction is not less than 90%.

Safety fencing shall be installed at the top of the wall as required by the agency.

Call for inspections as follows:

- A. When the footing has been formed, with the steel tied securely in final position, and is ready for the concrete to be placed.
- B. Where cleanout holes are not provided:
 - (1) After the blocks have been laid up to a height of 4', or full height for walls up to 5', with steel in place but before the grout is poured, and
 - (2) After the first lift is properly grouted, the blocks have been laid up to the top of the wall with the steel tied securely in place but before the upper lift is grouted.

Where cleanout holes are provided:

After the blocks have been laid up to the top of the wall, with the steel tied securely in place, but before grouting.

- C. After grouting is complete and after rock or rubble wall drains are in place but before earth backfill is placed.
- D. Final inspection when all work has been completed.

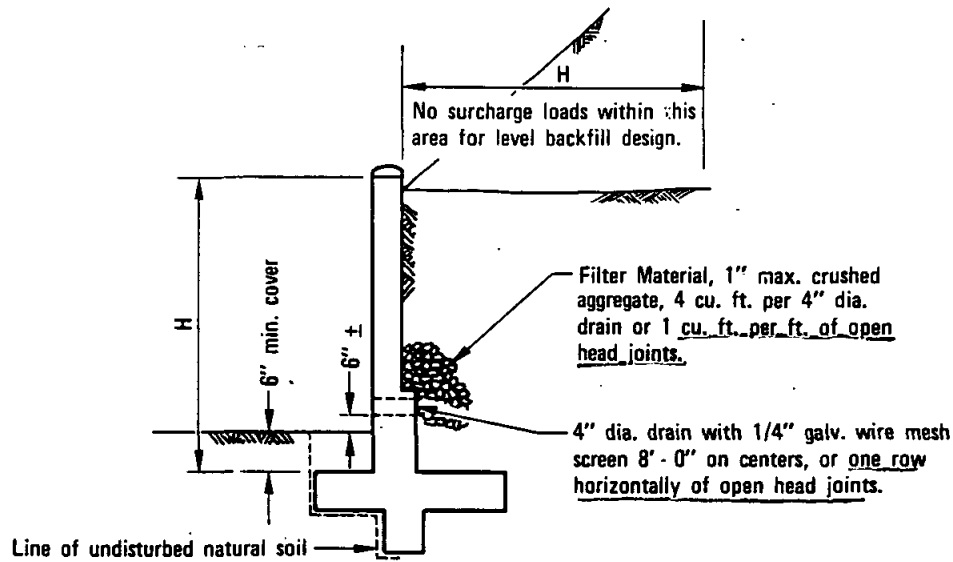
Concrete grout shall attain a minimum compressive strength of 2,000 psi in 28 days and mortar shall attain 1,800 psi in 28 days. All cells shall be filled with grout. Rod or vibrate grout within 10 minutes of pouring to insure consolidation. Bring grout to a point 2" from the top of masonry units when grouting of second lift is to be continued at another time.

To insure proper bonding between the footing and the first course of block, a mortar key shall be formed by embedding a flat 2 X 4 flush with and at the top of the freshly poured footing. The 2 X 4 should be removed after the concrete has started to harden (approximately 1 hour). A mortar key may be omitted if the first course of block is set into the fresh concrete when the footing is poured, and a good bond is obtained.

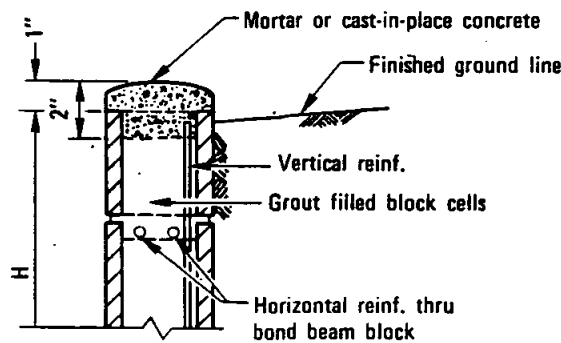
Wall drains shall be provided in accordance with Standard Drawing C-8.

All footings shall extend at least 12 inches into undisturbed natural soil or approved compacted fill. Soil should be dampened prior to placing concrete in footings.

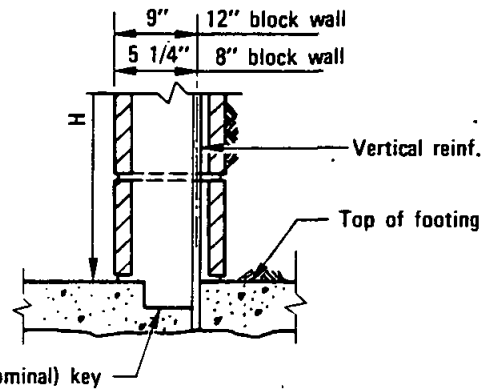
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Allen G. Kerschbaum</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date
New Des.	RP	M.B.	10-82		
Notes		M.B.	5-86	GENERAL NOTES FOR MASONRY RETAINING WALLS	DRAWING NUMBER C-7
Notes	RC	A.H.	7-88		



TYPICAL SECTION



CAP DETAIL



KEY DETAIL

NOTES:

1. All masonry retaining walls shall be constructed with cap, key and drainage details as shown hereon.
2. 4" diameter drain may be formed by placing a block on it's side.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen G. Kerschbaum *Dec. 1975*
Coordinator R.C.E. 19807 Date

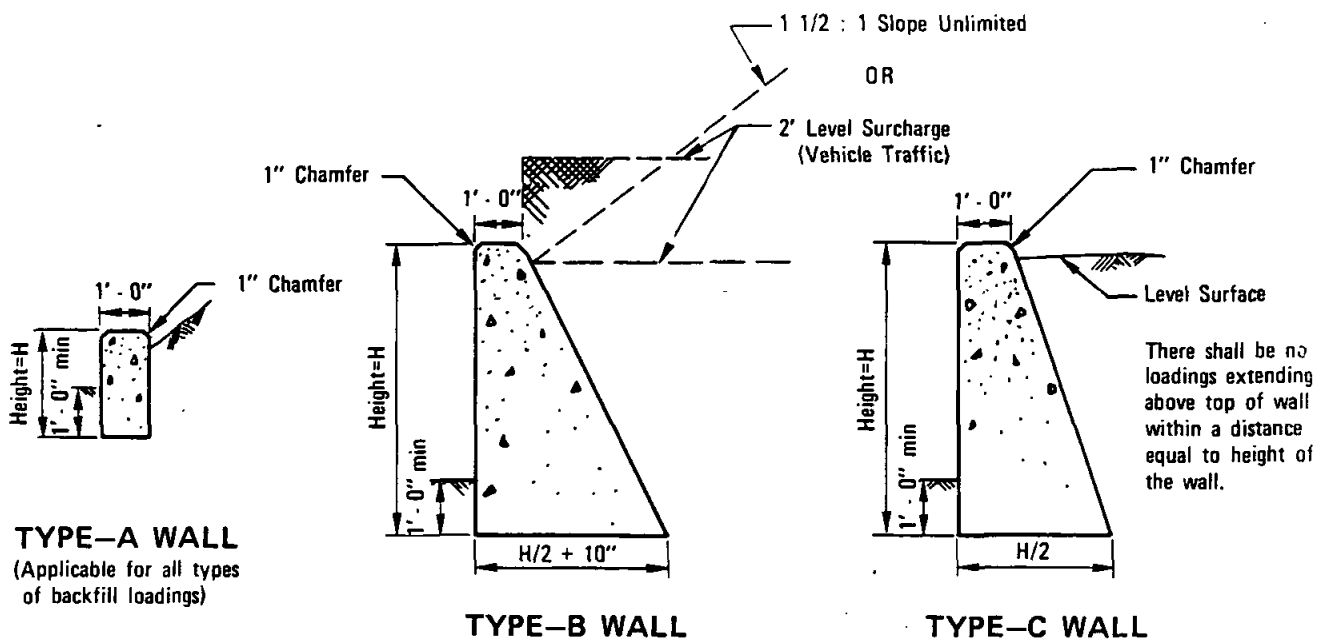
SAN DIEGO REGIONAL STANDARD DRAWING

DETAILS FOR MASONRY RETAINING WALL

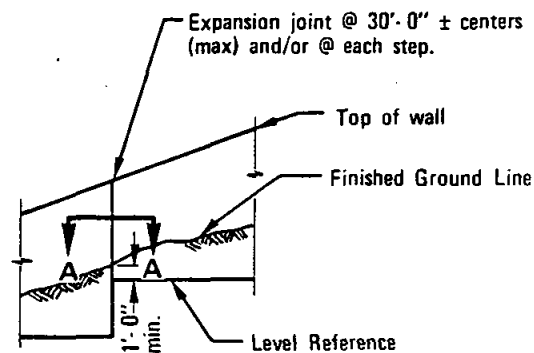
**DRAWING
NUMBER**

C-8

Revision	By	Approved	Date
Note 2	SC	A.H.	7/88



WALL TYPE	HEIGHT	BASE	CONC CF/FT
A	1' - 6"	1' - 0"	1.50
	2' - 0"	1' - 0"	2.00
B	3' - 0"	2' - 4"	4.99
	4' - 0"	2' - 10"	7.66
	5' - 0"	3' - 4"	10.82
	6' - 0"	3' - 10"	14.49
C	3' - 0"	1' - 6"	3.75
	4' - 0"	2' - 0"	6.00
	5' - 0"	2' - 6"	8.75
	6' - 0"	3' - 0"	12.00



TYPICAL ELEVATION

NOTE

See Standard Drawing C-10 for Section A-A, notes and details.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE		
				GRAVITY RETAINING WALLS		<i>Allard A. Kershner</i>	<i>Dec. 1975</i>	
						Coordinator	R.C.E. 19807	Date
						DRAWING NUMBER	C-9	

CONCRETE

Concrete shall be 560-C-3250.

DESIGN CONDITIONS

Walls are to be used for the loading conditions shown for each type wall. Design H may be exceeded by six inches before going to next size.

DESIGN DATA

$F_c = 1200 \text{ psi}$ $F'_c = 3000 \text{ psi}$
Earth = 120 pcf and equivalent fluid pressure = 36 psf per foot of height

Walls shown for 1 1/2:1 unlimited sloping surcharge are designed in accordance with Rankine's Formula for unlimited sloping surcharge with $\phi = 33^\circ - 42^\circ$.

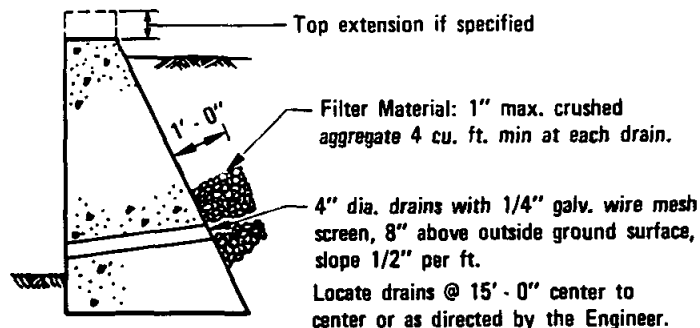
Note: Maximum toe pressure under wall footing = 1 1/2 tons. Special design required where footing material is incapable of supporting this pressure.

EXCAVATION AND BACKFILL

Compaction of backfill material by jetting or ponding with water will not be permitted.

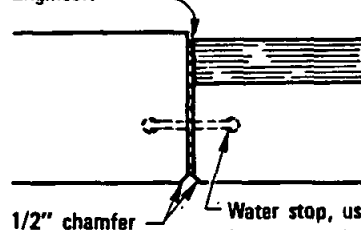
Each layer of backfill shall be moistened as directed by the Engineer and thoroughly tamped, rolled or otherwise compacted until the relative compaction is not less than 90 percent.

No backfill material shall be deposited against concrete retaining walls until the concrete has developed a strength of 2,500 pounds per square inch in compression as determined by test cyclinders, or until 28 days after wall has been placed.

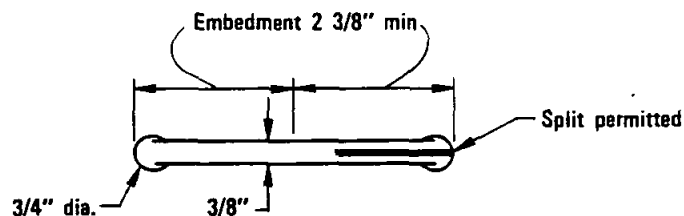


TYPICAL DRAINAGE WHEN H IS GREATER THAN 4' - 0"

1/2" Expansion joint, fill with premolded expansion joint filler. Locate joints at 30' - 0" \pm centers or as directed by the Engineer.



SECTION A-A



RUBBER WATERSTOP

Use only when watertight joint is required.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan D. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

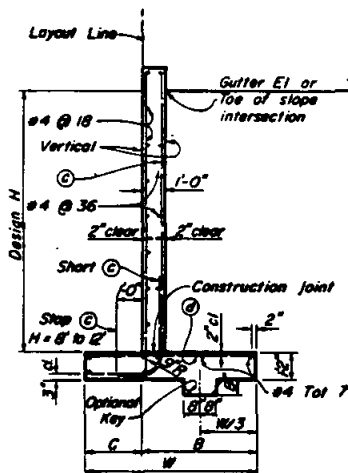
C-10

SAN DIEGO REGIONAL STANDARD DRAWING

GENERAL NOTES AND DETAILS FOR GRAVITY RETAINING WALLS

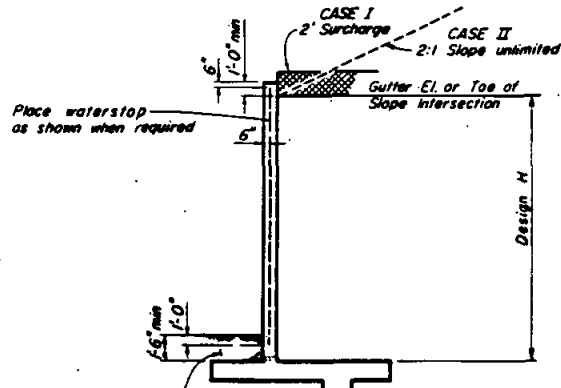
Revision	By	Approved	Date
Conc.	R	M.B.	5-86

**DRAWING
NUMBER** **C-11**



SPREAD FOOTING SECTION

Place concrete in toe against undisturbed material, except as permitted by the Engineer.



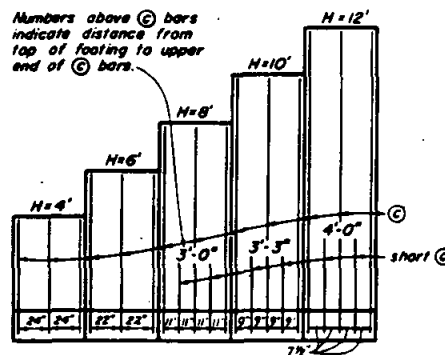
DESIGN

For drainage notes and other details, see "Retaining Wall Details No. 1," drawing C-13.

Note:

Quantities apply to Design H portion and exclude the added portion above "Gutter Elevation."

TABLE OF REINFORCING STEEL DIMENSIONS AND DATA						
Design H	4'	6'	8'	10'	12'	
W	3'-2"	4'-2"	5'-2"	6'-2"	7'-2"	
C	1'-0"	1'-4"	1'-8"	2'-0"	2'-4"	
B	2'-2"	2'-10"	3'-6"	4'-2"	4'-10"	
⊙ bars	#5 @ 24	#5 @ 22	#5 @ 11	#6 @ 9	#7 @ 7 1/2	
⊙ bars	#5 @ 24	#5 @ 22	#5 @ 22	#7 @ 18	#8 @ 15	
Total ⊙ bars	6 - #5	6 - #5	6 - #5	10 - #7	10 - #7	
Total ⊙ bars				4 - #7	4 - #7	
CASE I - Toe Press. psf	1590	1930	2240	2550	2840	
CASE II - Toe Press. psf	1060	1460	1860	2280	2700	
Spread Steel lbs./ft.	15	21	27	46	70	
Footing Conc CF/ft.	8.6	11.8	14.9	18.1	21.3	
Pile Ftg Steel lbs./ft.	25	32	38	75	101	
Pile Ftg Conc CF/ft.	9.9	11.9	15.3	18.8	22.2	



ELEVATION

Note:

Reinforcement detailed is to be placed in addition to that shown for spread footing. All piles not shown, see Pile Layout on plans.

⊙ For pile footing Design H=4' use same footing dimensions as Design H=6'

NOTES

Design Conditions

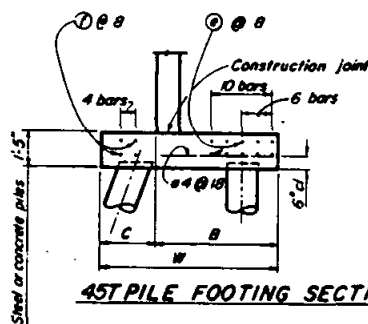
Design H may be exceeded by 6" before going to the next size. Footing key is required except when found unnecessary by the Engineer. Special footing design is required where foundation material is incapable of supporting toe pressure loads listed in table.

Design Data

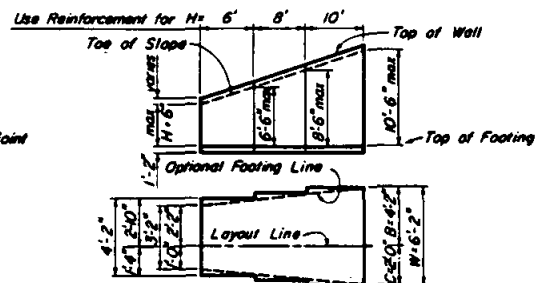
$f_c = 1300$ psi $f'_c = 3250$ psi $f_s = 24,000$ psi
 $n = 10$ earth = 120 pcf

Case I Equivalent fluid pressure = 36 psf max for determination of toe pressure. 27 psf min for determination of heel pressure.

Case II - Earth pressure determined from Rankine's formula with $\phi = 33^\circ - 42^\circ$.



45° PILE FOOTING SECTION



Note:
 Bar cut-offs may be varied in increments of 6".

TYPICAL LAYOUT EXAMPLE

For joints required, see Details 3-3 and 3-4, drawing C-15

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

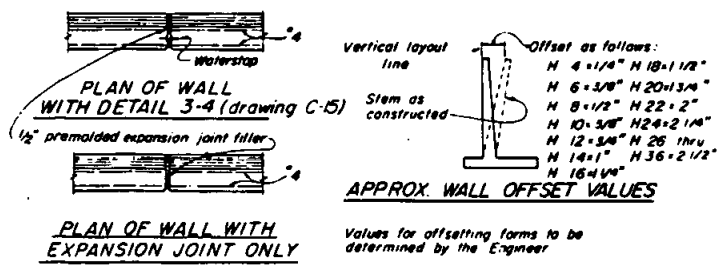
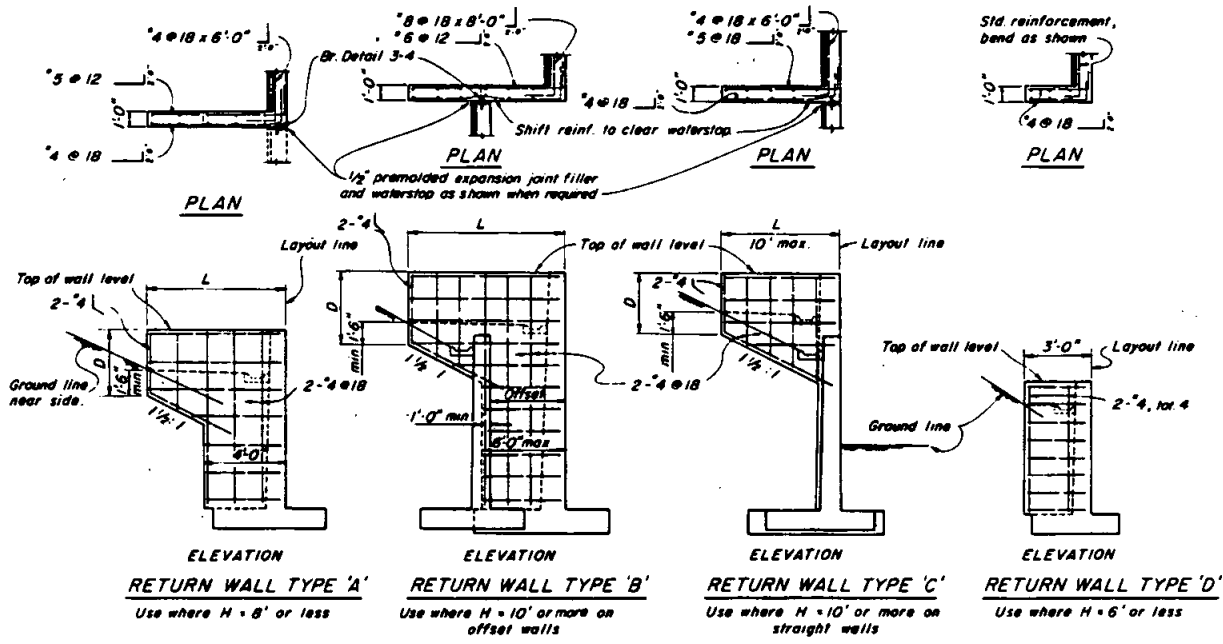
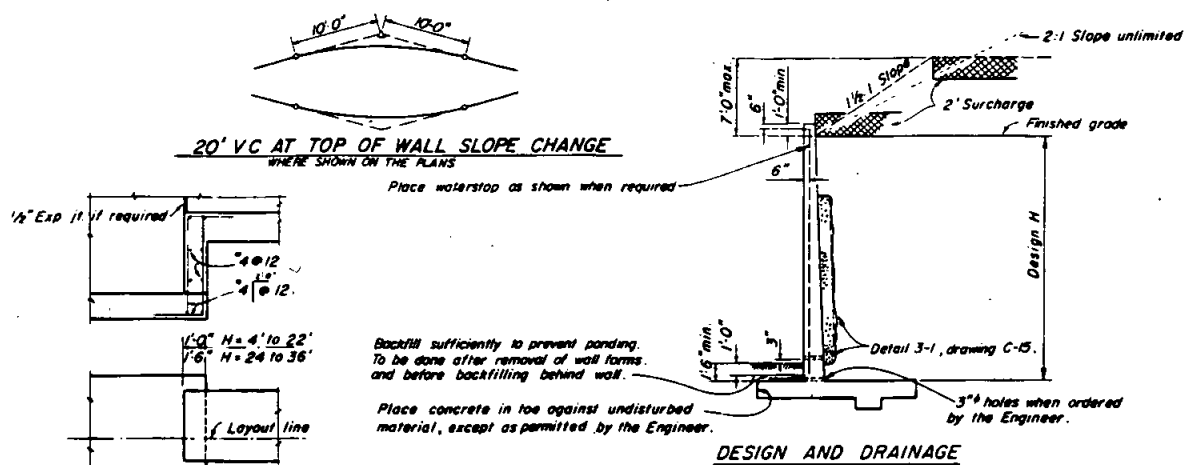
Alfred J. Kunkel Dec. 1975
 Coordinator R.C.E. 19807 Date

DRAWING NUMBER **C-12**

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL TYPE 1A

Revision	By	Approved	Date



NOTES:

Design Conditions:

Design H may be exceeded by 6" before going to the next size.

Footing key is required except when found unnecessary by the Engineer.

Special footing design is required where foundation material is incapable of supporting toe pressure loads listed in table.

Return wall not required unless shown elsewhere.

Design Data:

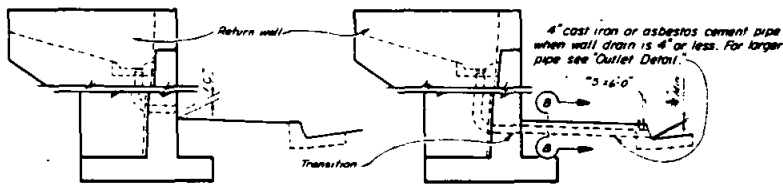
$f_c = 1300$ psi $f_s = 3250$ psi $f_s = 24,000$ psi $n = 10$ earth = 120 pcf

2' Surcharge = 36 pcf max. for determination of toe pressure.

Equivalent fluid pressure = 27 pcf min. for determination of heel pressure.

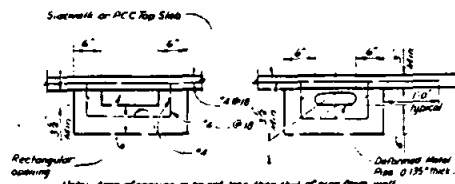
Earth pressures for 2:1 unlimited slope, 1 1/2:1 slope, and 1 1/2:1 unlimited slope, determined from Rankine's formula with $\phi = 33^\circ-42^\circ$.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Title	EC	M.B.	5-86			Coordinator R.C.E. 19807	
				REINFORCED CONCRETE RETAINING WALL DETAILS NO. 1		Allen J. Kershner	Dec. 1975
						DRAWING NUMBER	C-13

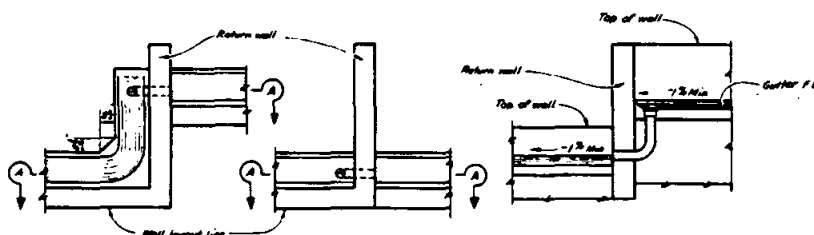


RETAINING WALL
FACE OF WALL OUTLET

RETAINING WALL
GUTTER OUTLET

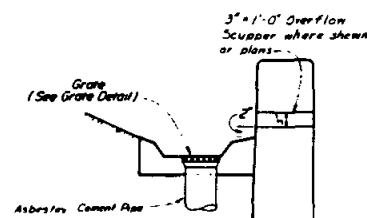


OUTLET DETAIL-SECTION B-B

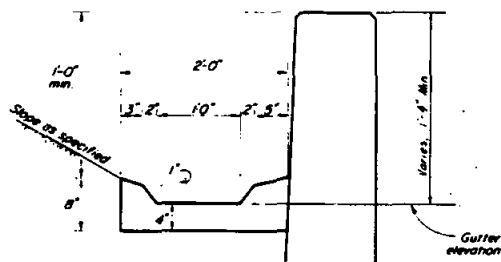


PLAN
OFFSET WALL
PLAN
CONTINUOUS WALL
DRAIN THROUGH RETURN WALL

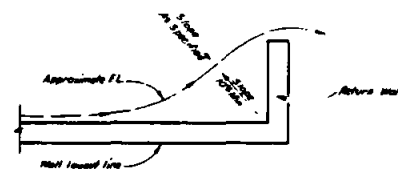
SECTION A-A



WALL DRAIN DETAIL



TYPICAL GUTTER DETAIL

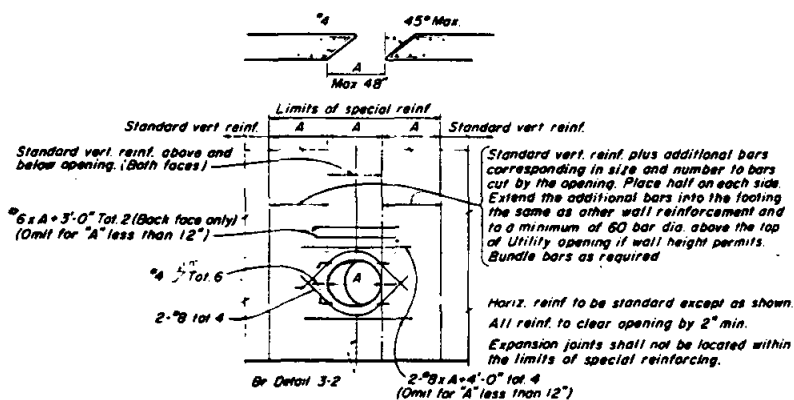


WALL DRAINAGE
WHERE GUTTER NOT REQUIRED



GRATE DETAIL

Sizes to fit Standard Hubs



RETAINING WALL-UTILITY OPENING

To be used in conjunction with the "Retaining Wall Type 1" sheet.
Max. size of Opening (A)=48"

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen O. Keshner Sec. 1975
Coordinator H.C.E. 19807 Date

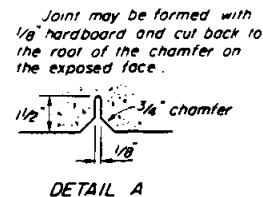
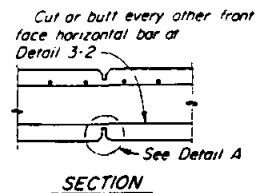
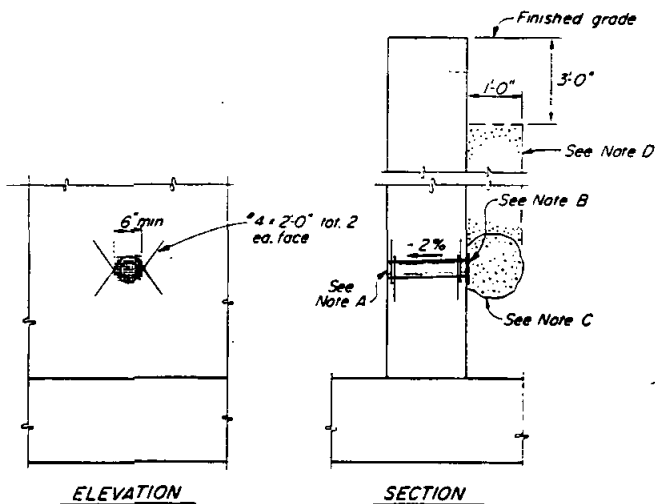
DRAWING
NUMBER

C-14

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE
RETAINING WALL DETAILS NO. 2

Revision	By	Approved	Date
Title	<i>W.B.</i>		5-80



WEAKENED PLANES

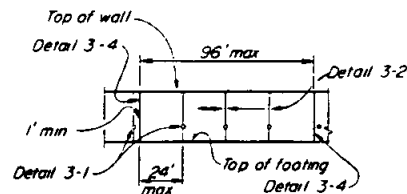
DETAIL 3-2

WEEP HOLE AND PERVIOUS BACKFILL

DETAIL 3-1

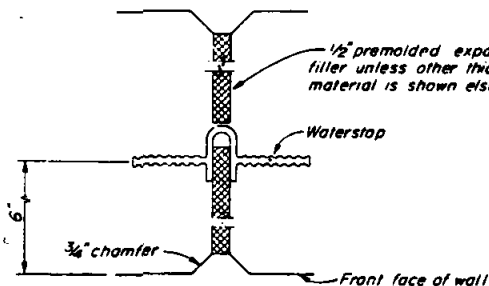
Notes:

- 4" x 2' max. center to center (9' c.c. for Type 3 and 9'-3" c.c. for Type 4 Retaining Walls) For walls adjacent to sidewalks or curbs, provide 4" cast iron or asbestos cement pipe under the sidewalk to discharge thru curb face. Exposed wall drains shall be located 3" above finished grade.
- 6" square aluminum or galvanized steel wire 4 mesh hardware cloth. (Min wire diameter 0.03") Anchor firmly to backface.
- One cubic foot pervious backfill material in a burlap sack, securely tied.
- Pervious backfill material continuous behind retaining wall.



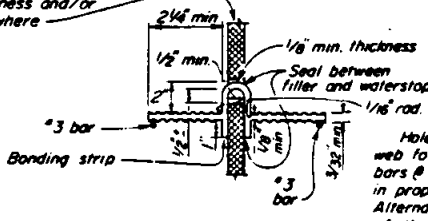
WALL EXPANSION JOINTS AND WEAKENED PLANES

DETAIL 3-3



WALL EXPANSION JOINT

DETAIL 3-4



WATERSTOP

DETAIL 3-6

Waterstop to have 5 or more pairs of raised ribs to provide 0.1 sq. in. min. rib cross-section area on each half of the waterstop. Height of ribs to be 3/32" min.

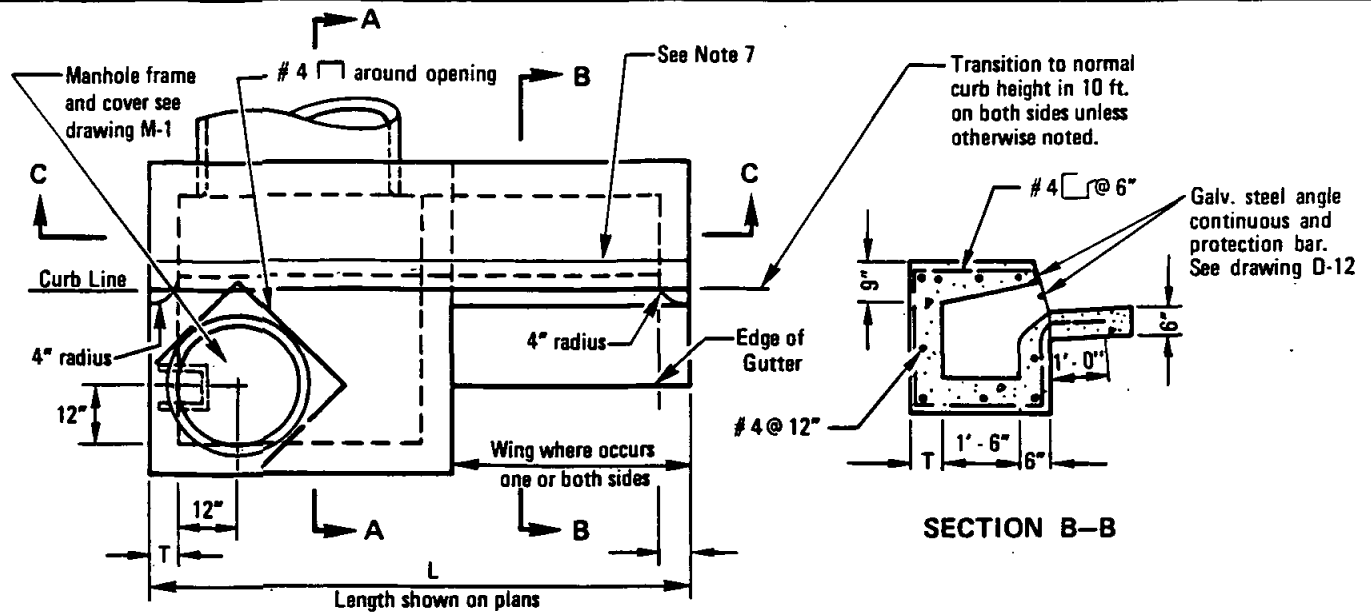
Holes will be permitted in the outer 1/2" of the web for wire, rings, etc. Tie web to 3" reinforcing bars @ 12" max. intervals to support the waterstop in proper position during concrete placement. Alternative detail may be submitted for approval of the Engineer.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Title	2	M.B.	5-86			Allen A. Kuehnel	Dec. 1975
				REINFORCED CONCRETE RETAINING WALL DETAILS NO. 3		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER	C-15

DRAINAGE SYSTEMS

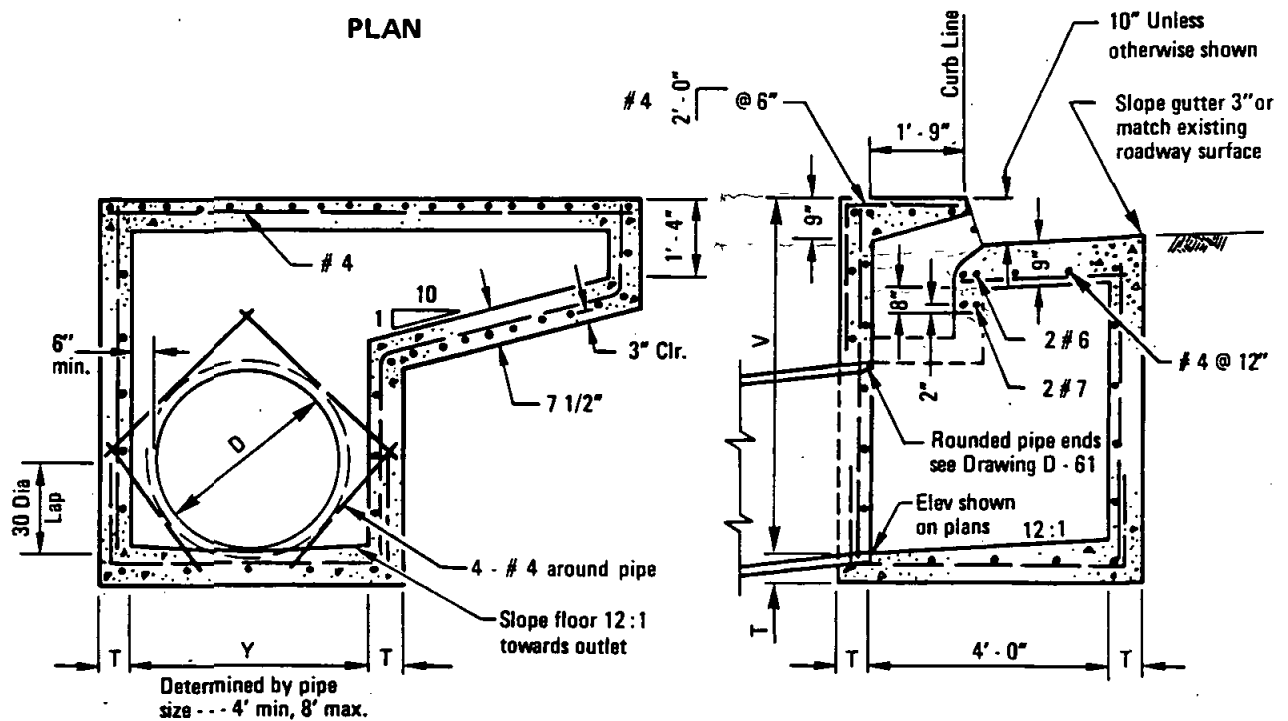
DRAINAGE SYSTEMS

D



PLAN

SECTION B-B



SECTION C-C

SECTION A-A

NOTES:

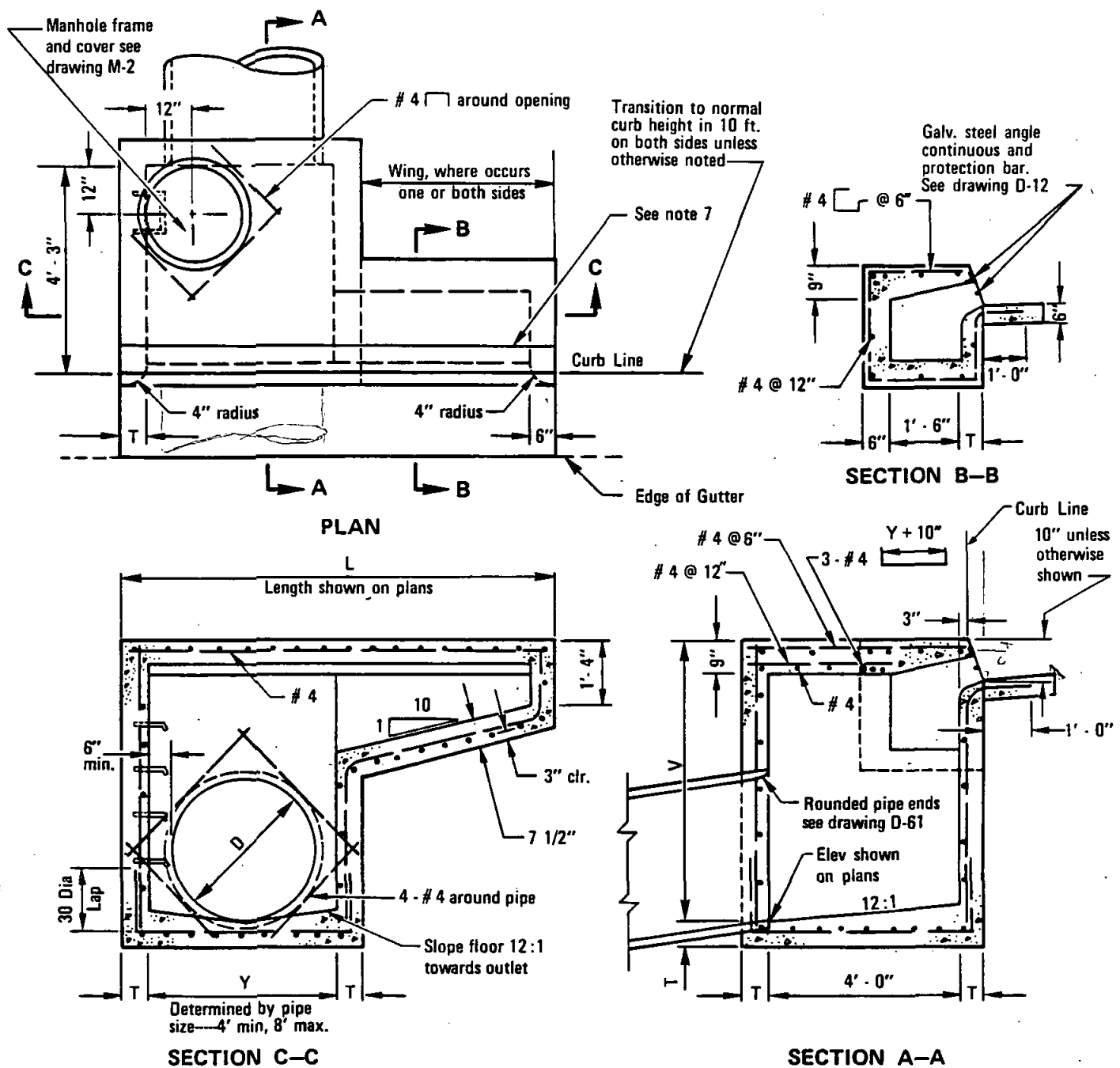
1. See Standard Drawings D-11 & D-12 for additional notes and details.
2. Types are designated as follows: (no wing) A, (one wing) A-1, (two wings) A-2.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. When V exceeds 4' steps shall be installed. See Standard Drawing D-11 for details.
5. Concrete gutter to match adjacent gutters.
6. An expansion joint shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide 1/4" tooled groove in top slab in line with back of adjacent curb.
8. Surface of top slab shall be sidewalk finished to drain toward street at a slope of 1/4" per foot.
9. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.

LEGEND ON PLANS

15' Type A-1 inlet



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Reference	TRP	M.B.	10-82			
Rebar	MC	M.B.	5-86	CURB INLET - TYPE A		<i>Allan A. Kuehn</i> Dec. 1975 Coordinator R.C.E. 19807 Date
						DRAWING NUMBER D-1

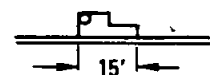


NOTES:

1. See Standard Drawings D-11 & D-12 for additional notes and details.
2. Types are designated as follows: (no wing) B, (one wing) B-1, (two wings) B-2.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. When V exceeds 4' steps shall be installed. See Standard Drawing D-11 for details.
5. Concrete gutter to match adjacent gutters.
6. An expansion joint shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide 1/4" tooled groove in top slab in line with back of adjacent curb.
8. Surface of top slab shall be sidewalk finished to drain toward street at a slope of 1/4" per foot.
9. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.

LEGEND ON PLANS

15' Type B-1 inlet



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Knechtel Dec. 1975
Coordinator R.C.E. 19807 Date

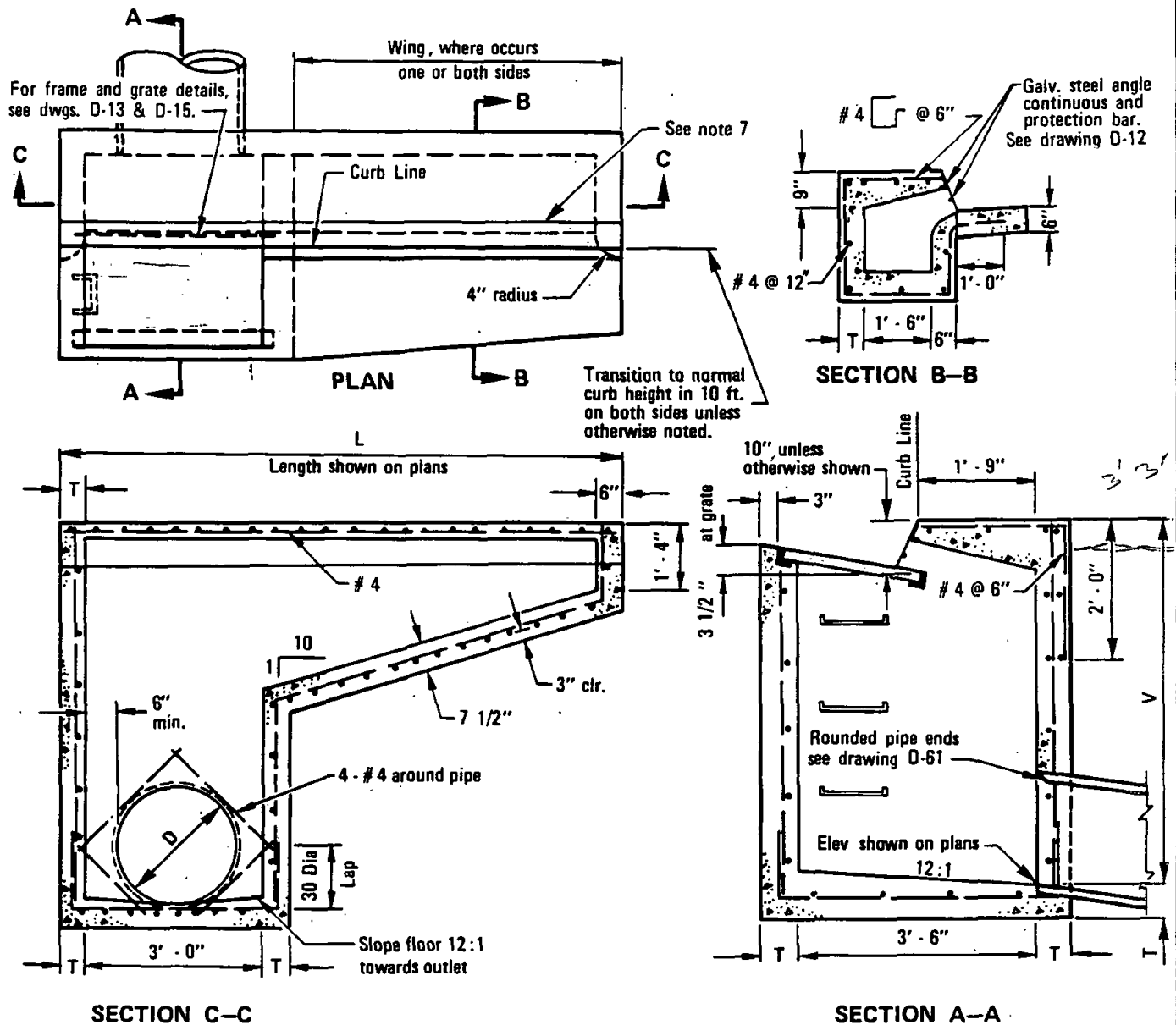
SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET - TYPE B

DRAWING
NUMBER

D-2

Revision	By	Approved	Date
Notes	J.P.	D.S.	7-79
Reference	TRP	M.B.	10-82
Rebar	RC	M.B.	5-86
Dash line	RC	A.H.	7-88

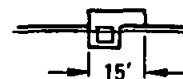


NOTES:

1. See Standard Drawings D-11 through D-15 for additional notes and details.
2. Types are designated as follows: (no wing) C, (one wing) C-1, (two wings) C-2.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. When V exceeds 4 ft. steps shall be installed. See Standard Drawing D-11 for details.
5. Concrete gutter to match adjacent gutters.
6. An expansion joint shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide 1/4" tooled groove in top slab in line with back of adjacent curb.
8. Surface of top slab shall be sidewalk finished to drain toward street at a slope of 1/4" per foot.
9. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.
10. Where inlet is to be constructed on grade and Standard Drawing D-20 concrete apron is required, lift down-grade end of grate as shown on D-20.

LEGEND ON PLANS

15' Type C-1 Inlet



Revision	By	Approved	Date
Notes	CS	D.S.	7-79
Reference	TRP	M.B.	10-82
Note 11	CS	M.B.	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET - TYPE C

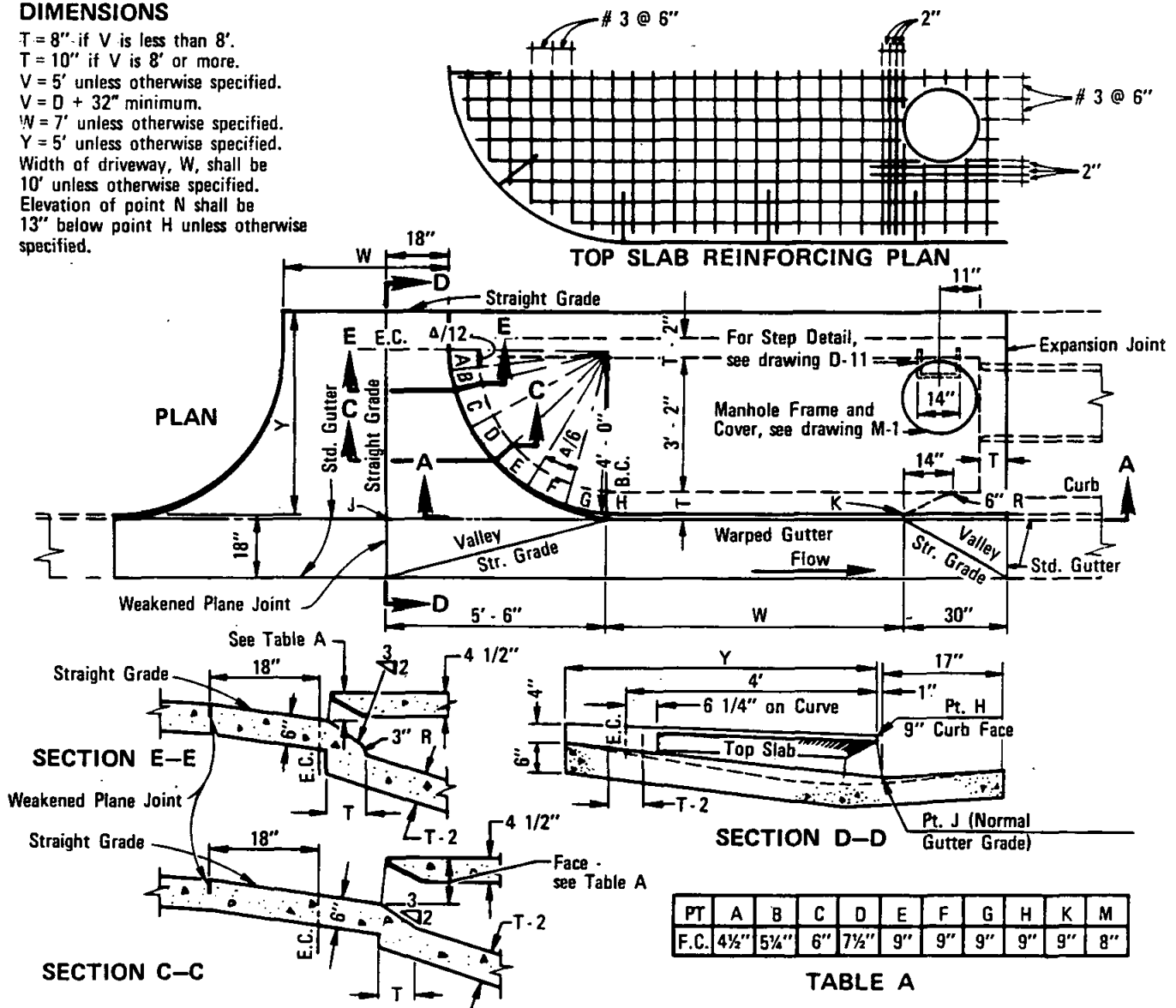
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen A. Kuehnert Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **D-3**

DIMENSIONS

$T = 8''$ if V is less than $8'$.
 $T = 10''$ if V is $8'$ or more.
 $V = 5'$ unless otherwise specified.
 $V = D + 32''$ minimum.
 $W = 7'$ unless otherwise specified.
 $Y = 5'$ unless otherwise specified.
 Width of driveway, W , shall be $10'$ unless otherwise specified.
 Elevation of point N shall be $13''$ below point H unless otherwise specified.



NOTES

- Steel Plate should be of one continuous piece with curve portion a circular arc. Length = Width + 18" + circular arc.
- # 4 rebar 30" long, 1' O.C. shall be installed in top of walls for ties to top and gutters.
- The reinforcing steel in the top slab shall be # 3 bars 6" O.C. unless otherwise specified. Clearance shall be 1 1/2" from the bottom of the slab.
- Concrete for the inlet top to be placed at the same time as the s/w curb and gutter.
- Concrete shall be 560-C-3250
- Exposed edges of concrete shall be rounded with a radius of 1/2".
- Surface of top slab shall be sidewalk finished to drain toward street at a slope of 1/4" per foot.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

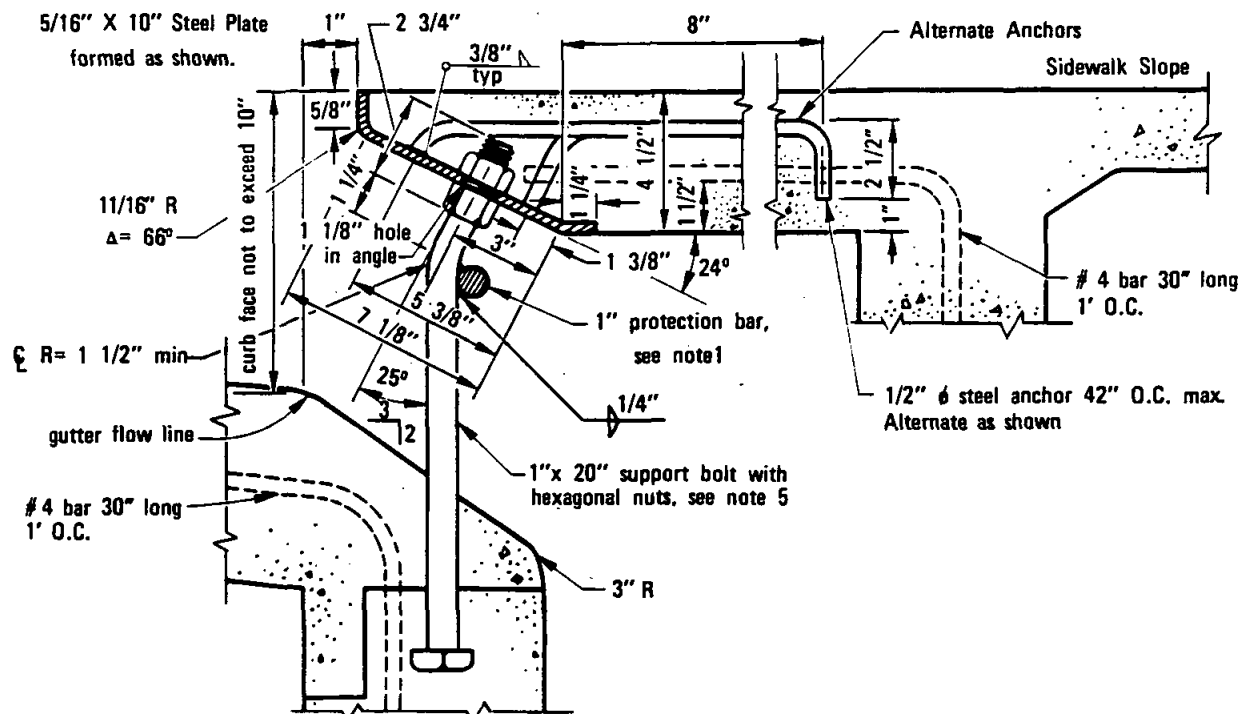
Alfred A. Kerschbaum Dec. 1975
 Coordinator R.C.E. 19807 Date

DRAWING NUMBER **D-4**

SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET - TYPE D

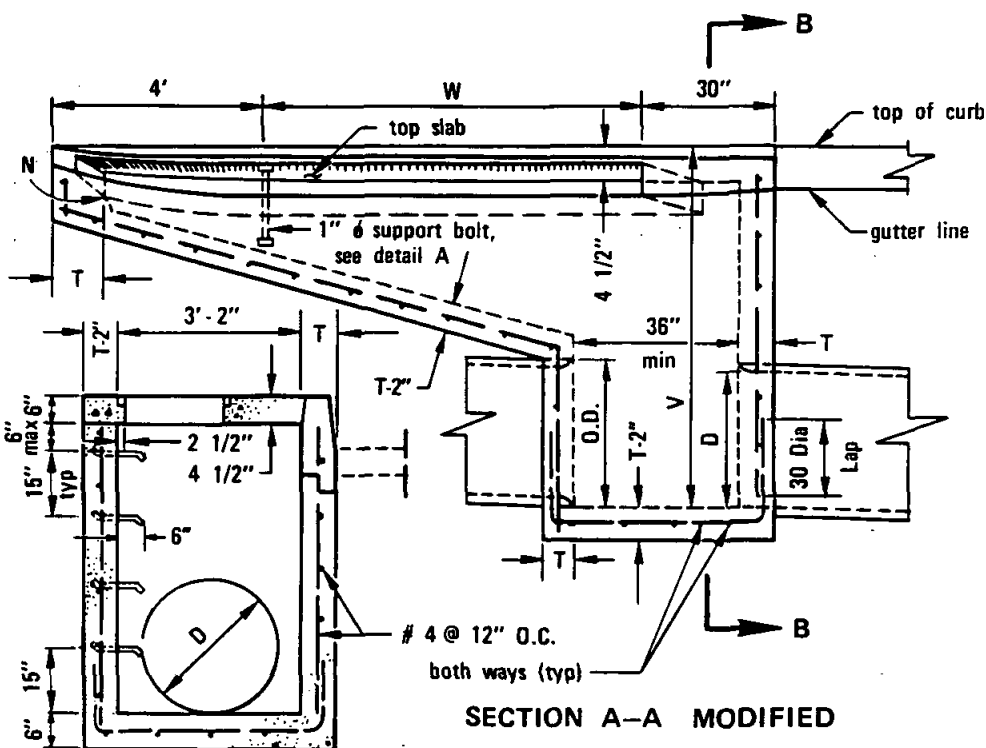
Revision	By	Approved	Date
Conc.	<i>R</i>	<i>M.B.</i>	5-86



DETAIL-A

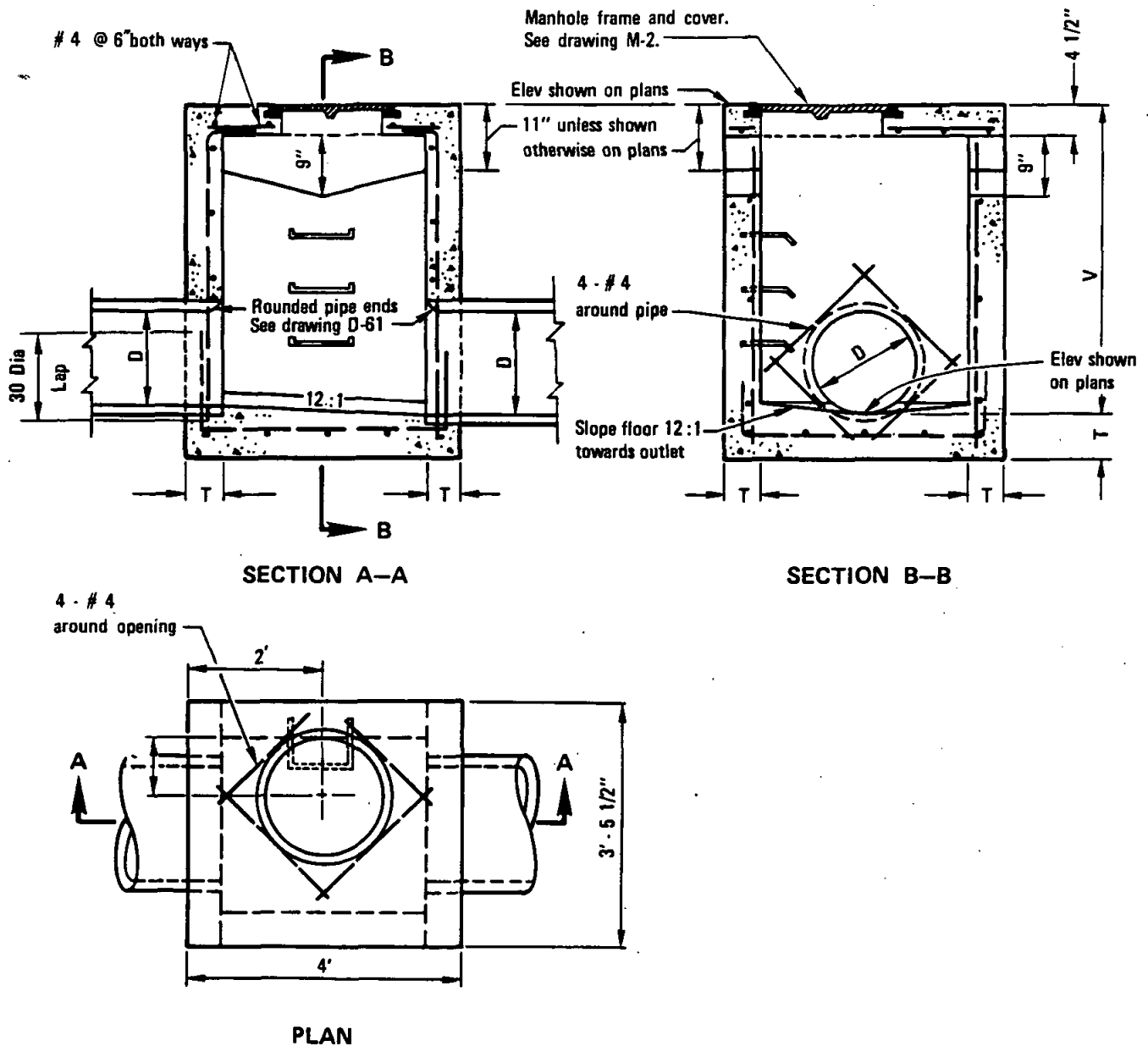
NOTES

1. A plain, round steel protection bar 1" in dia. shall be installed. Bar shall be embedded 5" at each end.
2. Leave 8" hole blocked out in bottom placing of concrete for bolts placed at same time as gutter.
3. All exposed metal parts shall be galvanized.
4. All galvanizing damaged by welding shall receive two coats of aluminum paint.
5. Support bolts shall be spaced at not more than 5' - 0" O.C.
6. Adjusting nuts to be tightened and secured in place when steel plate is in proper position.



SECTION B-B

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Rebar	TR	M.B.	10-82			Allan A. Kuehnel	
Lap	SC	M.B.	5-86	CURB INLET - TYPE D (DETAILS)		Coordinator	R.C.E. 19807
						Date	Dec. 1975
						DRAWING NUMBER	
						D-5	



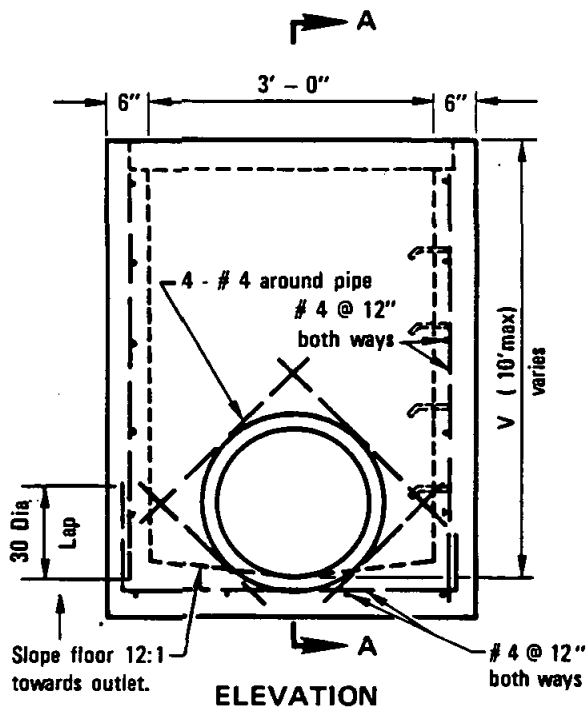
NOTES

1. See Standard Drawing D-11 for additional notes and details.
2. When V exceeds 4' steps shall be installed. See Standard Drawing D-11 for details.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. Openings on both sides unless otherwise shown on plans.
5. Maintain 1 1/2" clear spacing between reinforcing and surface.

LEGEND ON PLANS

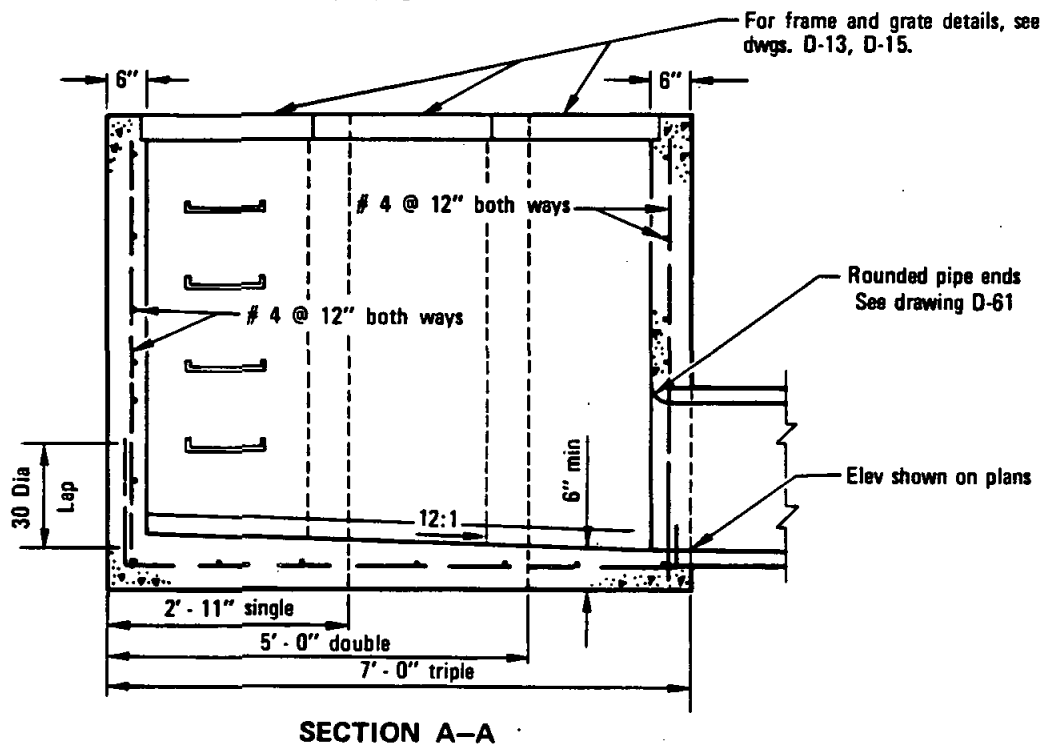


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Rebar	TRF	M.B.	10-82			Allard O. Kerschbaum Dec. 1975	
Lap	SC	M.B.	5-86	CATCH BASIN - TYPE F		Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER D-7	



NOTES

1. See Standard Drawing D-11 for additional notes and details.
2. When V exceeds 4', steps shall be installed. See Standard Drawing D-11 for details.
3. Maintain 1 1/2" clear spacing between reinforcing and surface.
4. Increase in allowable depth subject to approval by Agency.
5. Section A-A shows 3 sizes and shall not imply that an interior wall is to be built for the structures with double or triple frame and grate.
6. Exposed edges of concrete shall be rounded with a radius of 1/2".
7. Designate types as follows: Single G-1, Double G-2 and Triple G-3.
8. Only end bearing grates shall be used. See Std. Drawing D-15.



LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

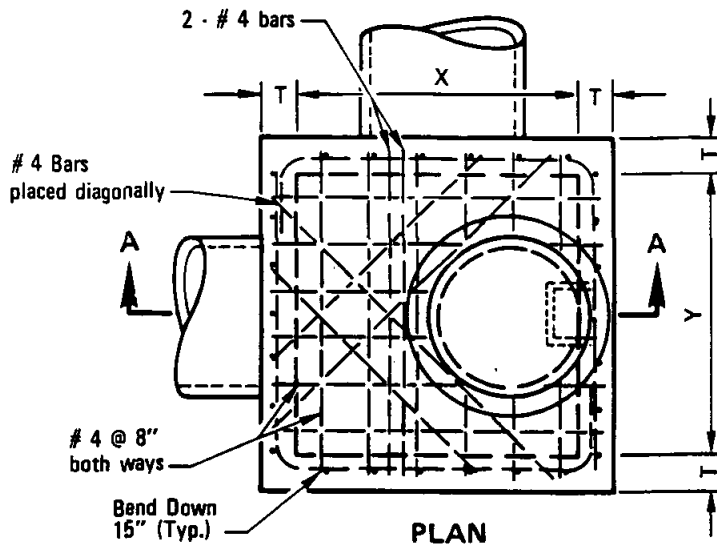
Allen O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

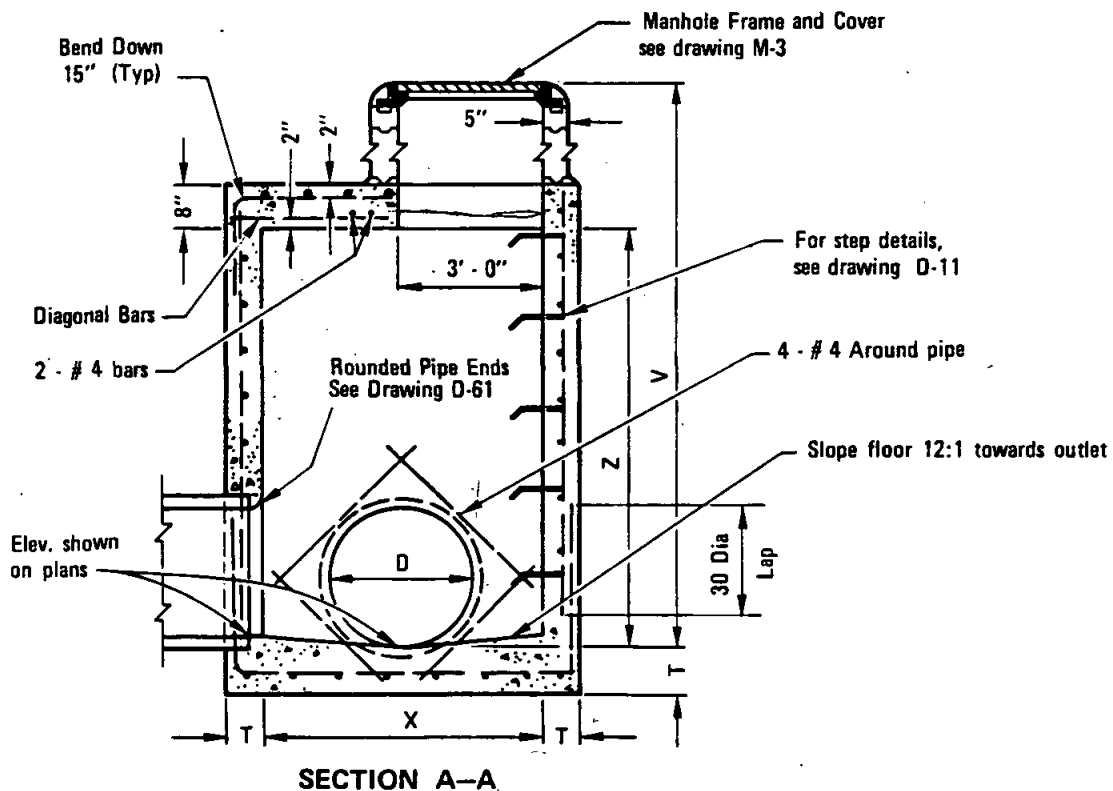
CATCH BASIN - TYPE G

Revision	By	Approved	Date
Reference	TRP	M.B.	10-82
Lap	R	M.B.	5-86

DRAWING
NUMBER **D-8**



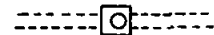
TYPE	PIPE DIA	X	Y	Z
A 4	up to 39"	4'	4'	6'
A 5	42" to 48"	5'	4'	6'
A 6	51" to 60"	6'	4'	6'
A 7	63" to 72"	7'	4'	7'
A 8	75" to 84"	8'	4'	8'



NOTES

1. See Standard Drawing D-11 for additional notes and details.
2. Concrete base shall be 560-C-3250
3. All precast components shall be reinforced with 1/4" diameter steel, wound spirally on 4" centers.
4. All joints shall be set in Class C mortar.
5. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.
6. Exposed edges of concrete shall be rounded with a radius of 1/2".

LEGEND ON PLANS



Revision	By	Approved	Date
Lap	LC	M.B.	5-86

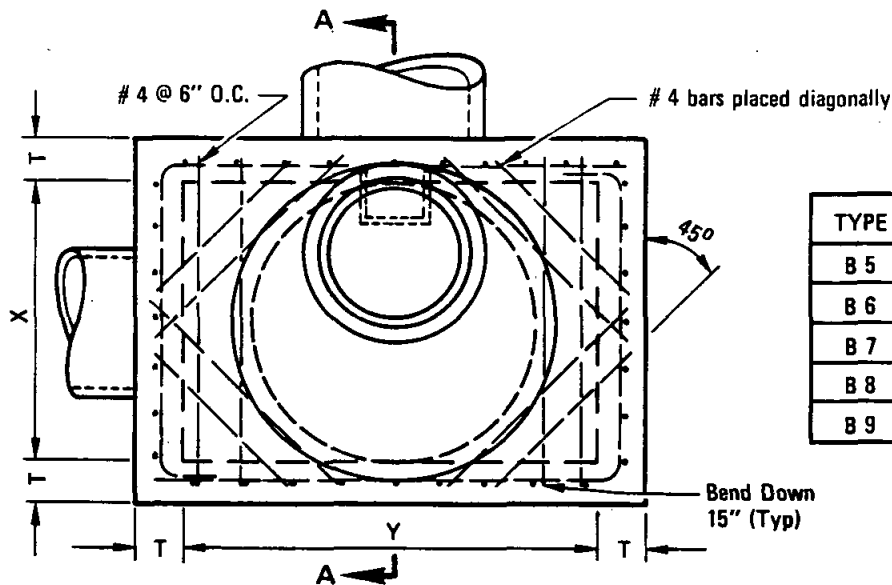
SAN DIEGO REGIONAL STANDARD DRAWING

STORM DRAIN CLEANOUT - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **D-9**



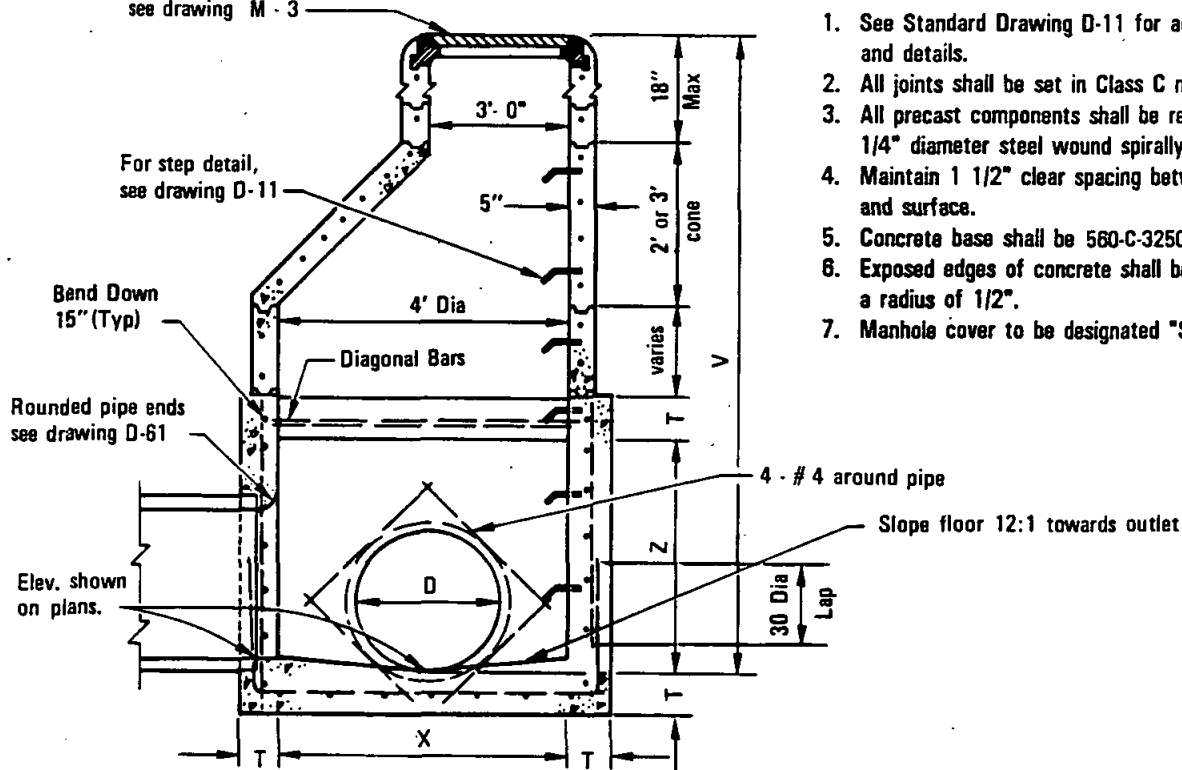
TYPE	PIPE DIA	X	Y	Z
B 5	up to 51"	4'	5'	5'
B 6	54" to 60"	4'	6'	6'
B 7	63" to 69"	4'	7'	7'
B 8	72" to 81"	4'	8'	8'
B 9	84" to 90"	4'	9'	9'

Manhole frame and cover
see drawing M-3

PLAN

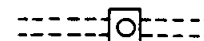
NOTES

1. See Standard Drawing D-11 for additional notes and details.
2. All joints shall be set in Class C mortar.
3. All precast components shall be reinforced with 1/4" diameter steel wound spirally on 4" centers.
4. Maintain 1 1/2" clear spacing between reinforcing and surface.
5. Concrete base shall be 560-C-3250.
6. Exposed edges of concrete shall be rounded with a radius of 1/2".
7. Manhole cover to be designated "Storm Drain".



SECTION A-A

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

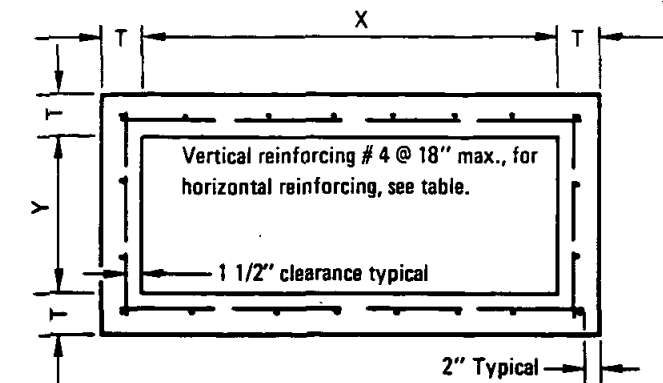
Allen D. Keshner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-10**

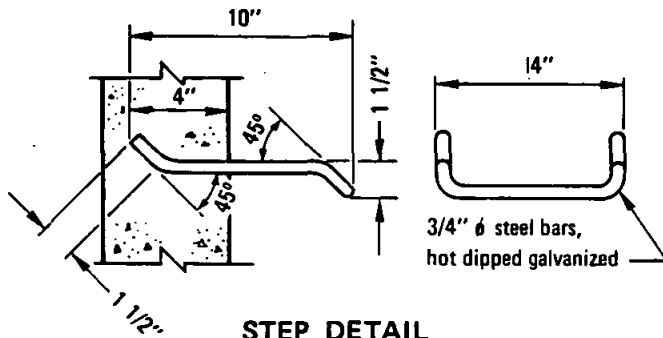
SAN DIEGO REGIONAL STANDARD DRAWING

STORM DRAIN CLEANOUT - TYPE B

Revision	By	Approved	Date
Lap	<i>JD</i>	<i>MD</i>	5-86
Note 7	<i>JD</i>	<i>MD</i>	5-92



TYPICAL BOX SECTION



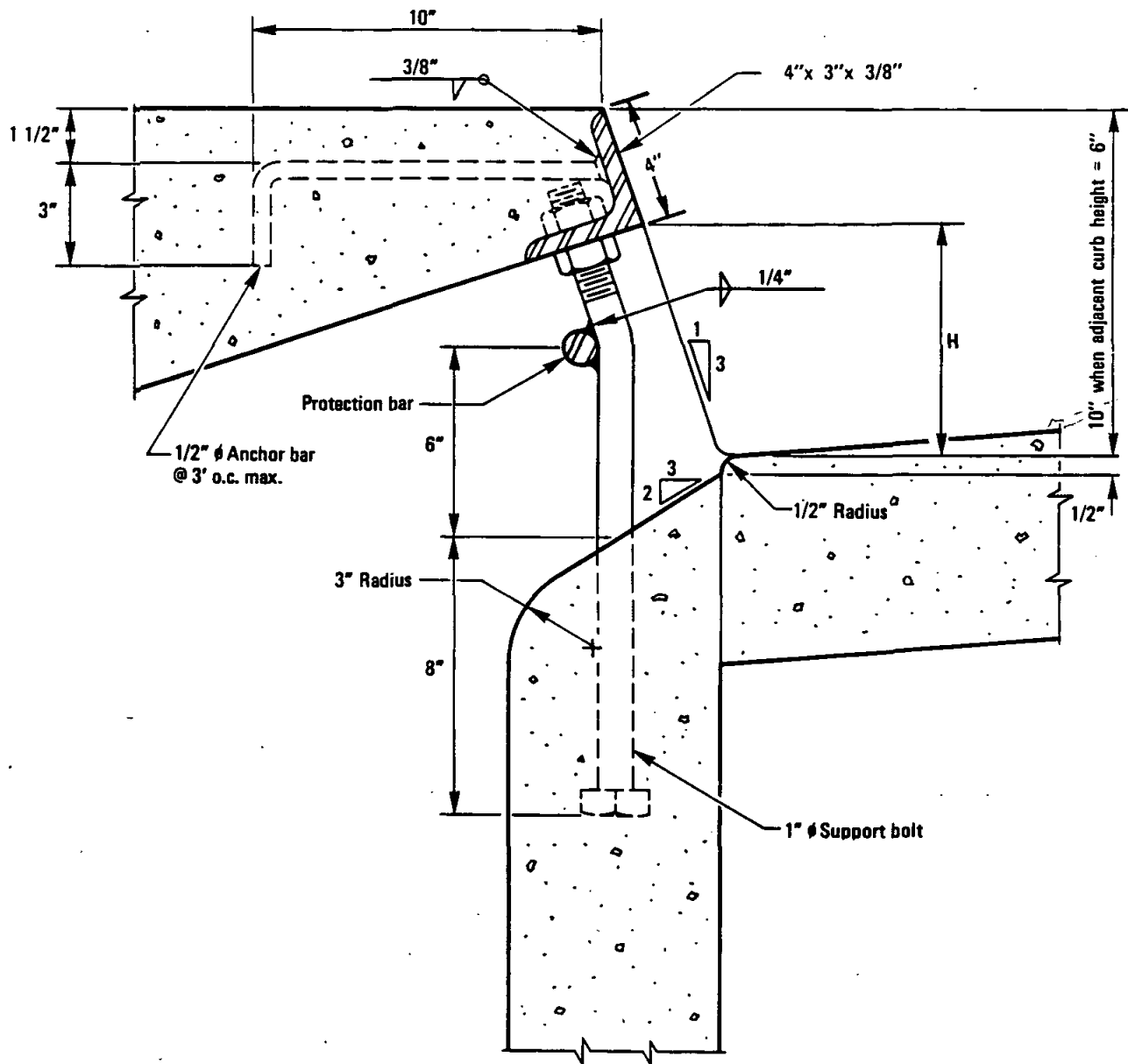
STEP DETAIL

BOX SECTION REINFORCEMENT			
MAXIMUM SPAN X or Y	DEPTH V	THICK- NESS T	HOR. & FLR. REINF.
3' - 0" to 4' - 0"	4' - 0"	6"	# 4 @ 18"
4' - 1" to 7' - 0"		6"	# 4 @ 12"
7' - 1" to 8' - 0"		6"	# 4 @ 8"
3' - 0" to 4' - 0"	4' - 1" to 8' - 0"	6"	# 4 @ 18"
4' - 1" to 5' - 0"		6"	# 4 @ 12"
5' - 1" to 6' - 0"		6"	# 4 @ 8"
6' - 1" to 8' - 0"	8' - 1" to 12' - 0"	6"	# 4 @ 6"
3' - 0" to 4' - 0"		6"	# 4 @ 15"
4' - 1" to 5' - 0"		8"	# 4 @ 12"
5' - 1" to 6' - 0"	12' - 0"	8"	# 4 @ 8"
6' - 1" to 8' - 0"		8"	# 4 @ 6"
3' - 0" to 4' - 0"		6"	# 4 @ 12"
4' - 1" to 5' - 0"	12' - 1" to 16' - 0"	8"	# 4 @ 12"
5' - 1" to 6' - 0"		8"	# 4 @ 8"
6' - 1" to 7' - 0"		8"	# 4 @ 6"
7' - 1" to 8' - 0"	16' - 1" to 20' - 0"	8"	# 5 @ 8"
3' - 0" to 4' - 0"		8"	# 4 @ 12"
4' - 1" to 5' - 0"		10"	# 4 @ 12"
5' - 1" to 6' - 0"	20' - 0"	10"	# 4 @ 8"
6' - 1" to 7' - 0"		10"	# 4 @ 6"
7' - 1" to 8' - 0"		10"	# 5 @ 8"
3' - 0" to 4' - 0"	20' - 1" to 24' - 0"	8"	# 4 @ 12"
4' - 1" to 5' - 0"		10"	# 4 @ 12"
5' - 1" to 6' - 0"		10"	# 4 @ 8"
6' - 1" to 7' - 0"	24' - 0"	10"	# 4 @ 6"
7' - 1" to 8' - 0"		12"	# 5 @ 8"

NOTES

- Concrete shall be 560-C-3250 unless otherwise noted.
- Reinforcing steel shall comply with this drawing unless otherwise specified.
- Reinforcing steel shall be intermediate grade deformed bars conforming to latest ASTM specifications.
- Bends shall be in accordance with latest ACI code.
- Minimum splice length for reinforcing shall be 30 diameters.
- Floor shall have a wood trowel finish and, except where used as junction boxes, shall have a minimum slope of 1" per foot toward the outlet.
- Depth V is measured from the top of the structure to the flowline of the box.
- Wall thickness and reinforcing steel required may be decreased in accordance with table above.
- Wall thickness shall be stepped on the outside of the box.
- When the structure depth V exceeds 4', steps shall be cast into the wall at 15 inch intervals from 15" above floor to within 12 inches of top of structure. Where possible place steps in wall without pipe opening, otherwise over opening of smallest diameter.
- Alternate step may be an approved steel reinforced polypropylene step.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Notes	By	Approved	Date		
Comp.	By	Approved	Date	INLETS AND CLEANOUTS NOTES AND DETAILS	<i>Allen O. Kershner</i> Dec. 1975 Coordinator R.C.E. 19807 Date
DRAWING NUMBER				D-11	



NOTES:

1. Face angle shall be cast into structure continuous for the full length "L".
2. All exposed metal parts to be hot-dipped galvanized after fabrication.
3. When curb inlet opening height (H) exceeds 6" install 1" ϕ steel protection bar.
4. Install additional bars at 3 1/2" clear spacing above first bar when opening exceeds 13".
5. When curb inlet opening length exceeds 8' install 1" ϕ steel support bolts, spaced at not more than 5' o.c.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

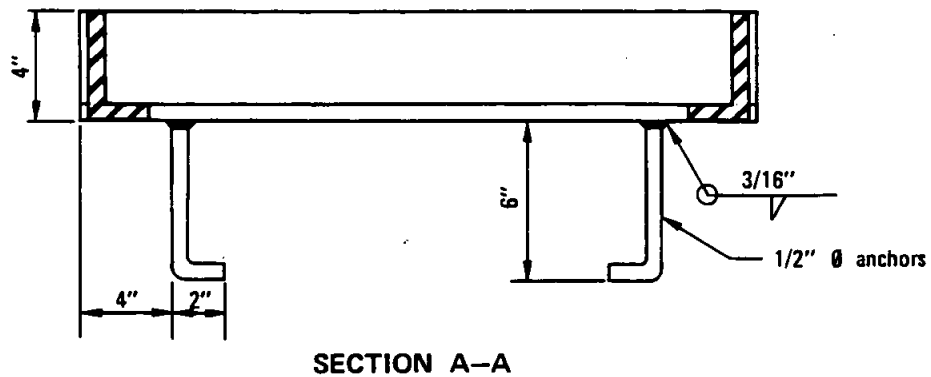
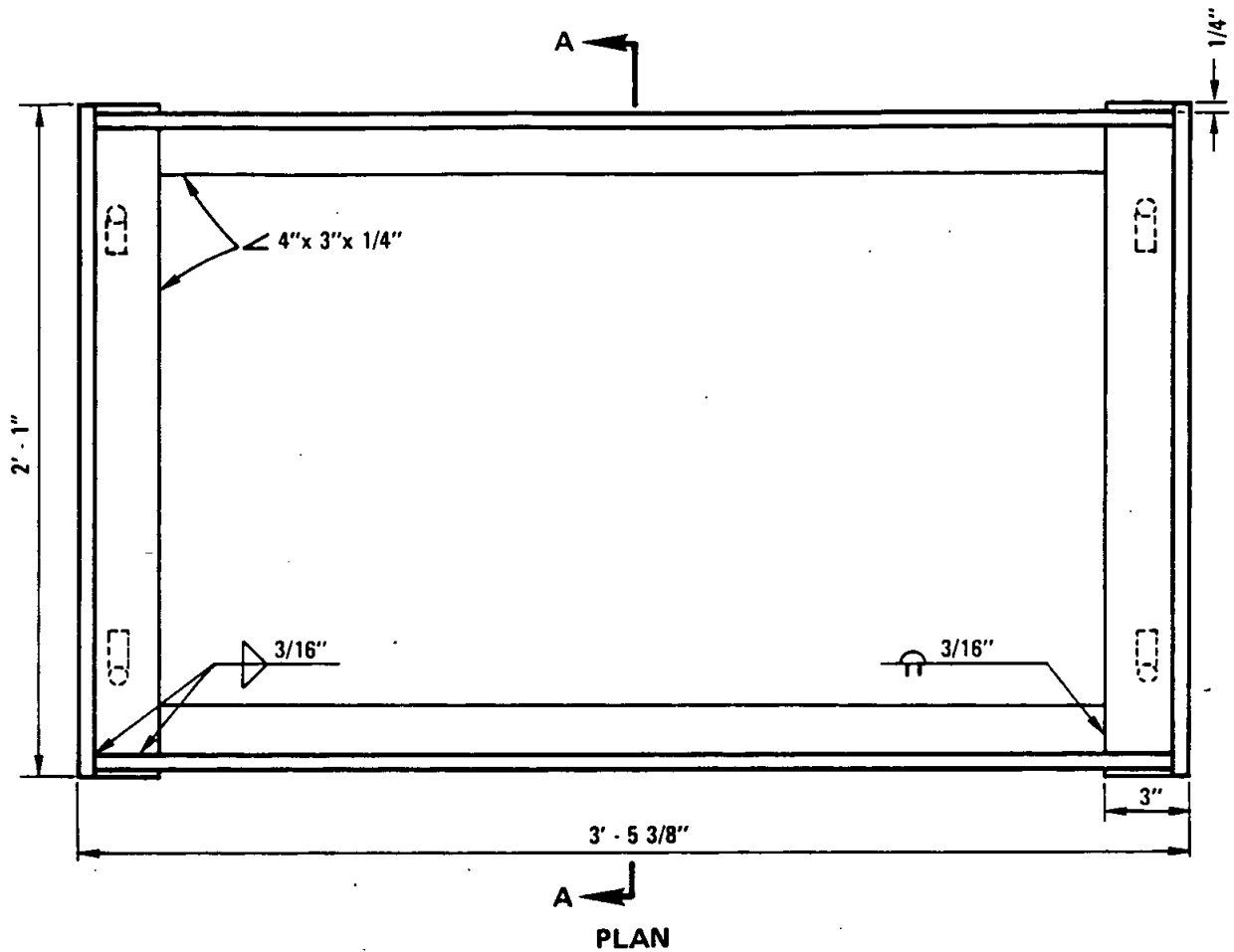
Allen O. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-12**

SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET OPENING

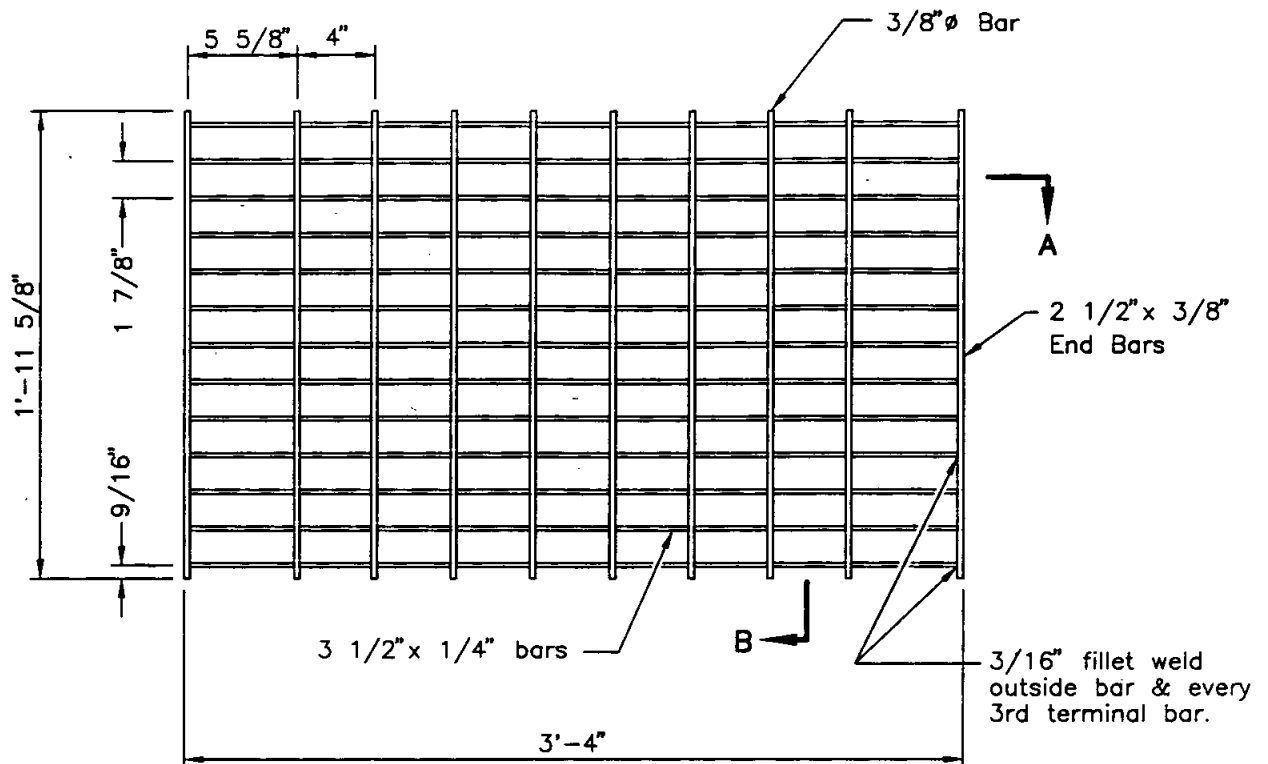
Revision	By	Approved	Date
Angle	SC	D.S.	7.79
Note 3	TRP	M.B.	10-82
Angle	TR	M.B.	10-82



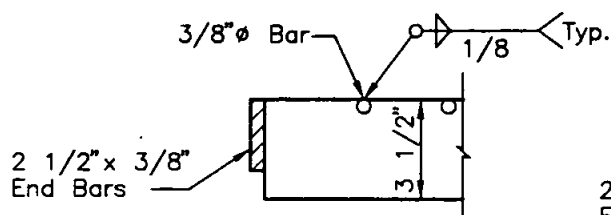
NOTES

1. Hot dip galvanize all parts after fabrication.

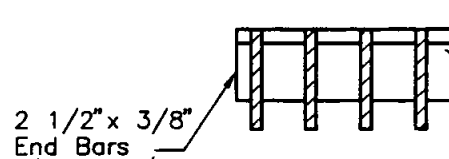
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Note 1	SC	M.B.	5-86			
				WELDED STEEL GRATE FRAME		<i>Alfred A. Kerschbaum</i> Dec. 1975 Coordinator R.C.E. 19807 Date
				DRAWING NUMBER		D-13



PLAN



SECTION A



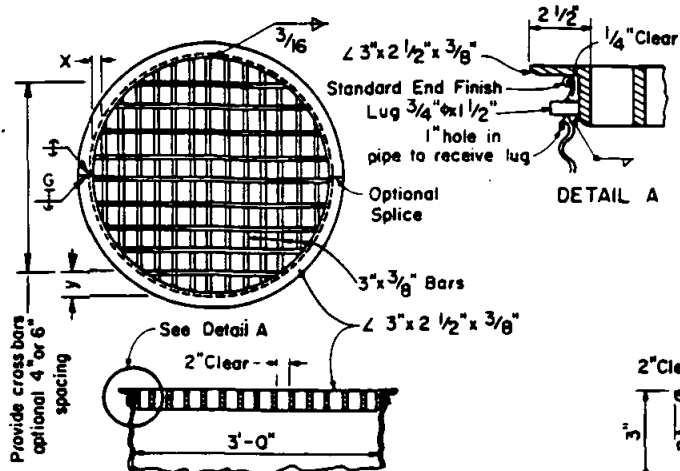
SECTION B

NOTES

1. Hot dip galvanize all parts after fabrication.
2. Dimensions to centerline of bars unless otherwise noted.
3. Weight: 141 pounds.
4. Not to be used in pedestrian areas.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Note #4	ON	2-95			
				DRAINAGE STRUCTURE GRATE	Chairman R.C.E. 25902 Date 2-95
					DRAWING NUMBER D-15

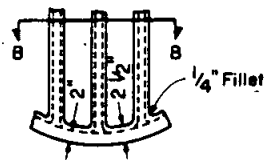
Revision	By	Approved	Date
Notes	<u>Sc</u>	<u>D.S</u>	<u>7-79</u>



GRATE DETAILS

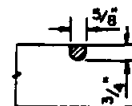
DETAIL A

ALTERNATIVE CAST NODULAR IRON GRATE OR CAST STEEL



3/8" Cross bars may be fillet welded, resistance welded or electroforged to bearing bars.

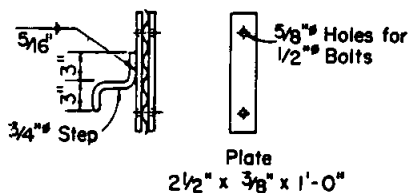
CROSS BAR DETAIL
GRATE (WELDED STEEL)



CROSS BAR DETAIL
ALTERNATIVE CAST NODULAR IRON GRATE OR CAST STEEL GRATE

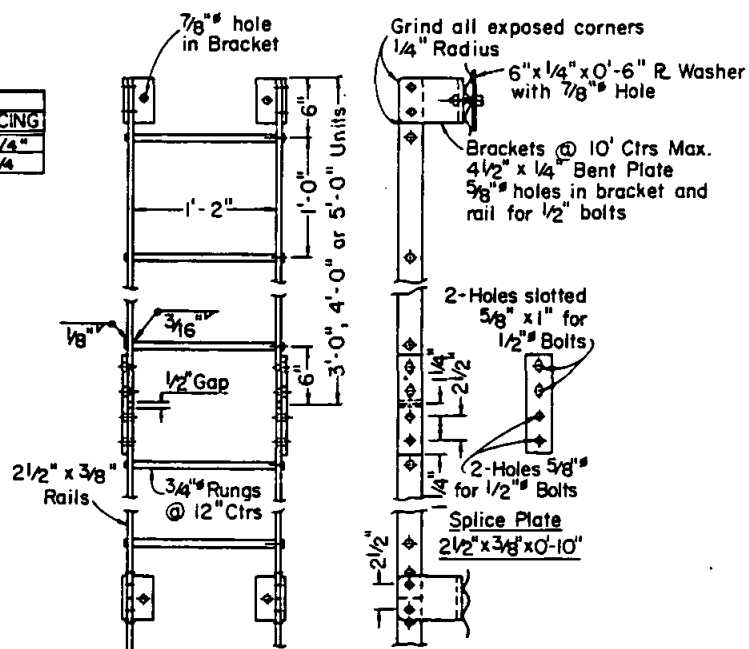
GRATE BAR SPACING TABLE

TYPE	NO. BARS	CLEAR BAR SPACING	X	4" SPACING	6" SPACING
welded	15	2	9/16	3 3/4"	5 3/4"
Cast	13	2	2 1/8	3 3/4"	5 3/4"



STEP DETAIL

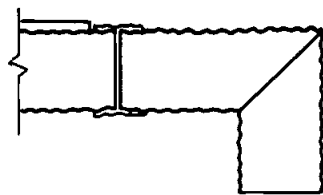
H = 3' - 6" to 4' - 11"



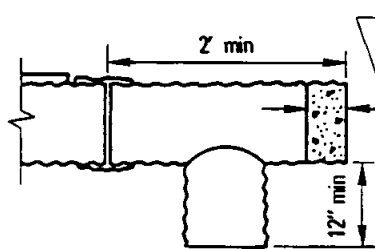
LADDER DETAIL

H = 5' - 0" or GREATER

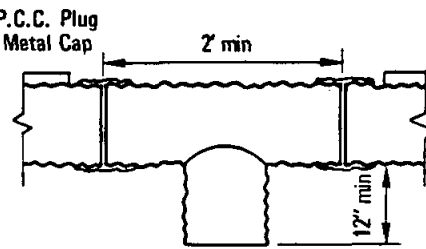
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				CORRUGATED STEEL PIPE INLETS DETAILS		<i>Alfred J. Kuehn</i> Dec. 1975 Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER D-17	



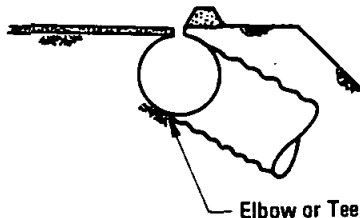
ELBOW



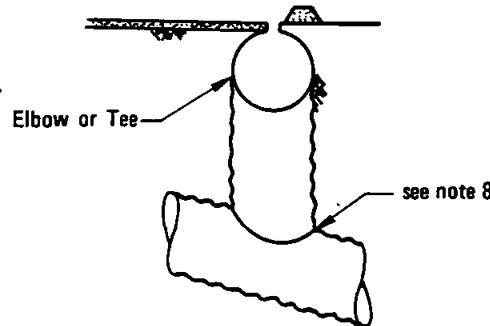
TEE



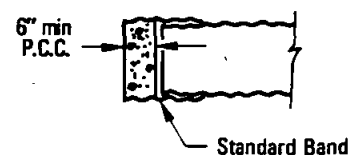
TEE-SAG CONDITION



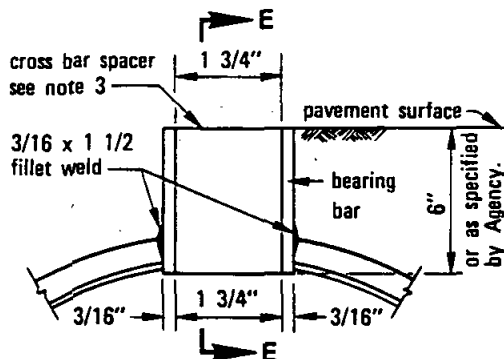
OVERSIDE DRAIN



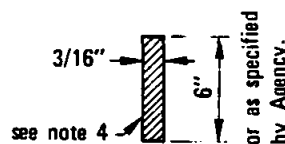
RISER



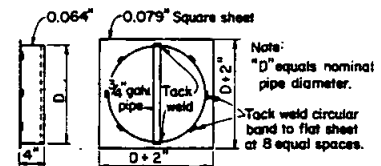
BAND PLUG



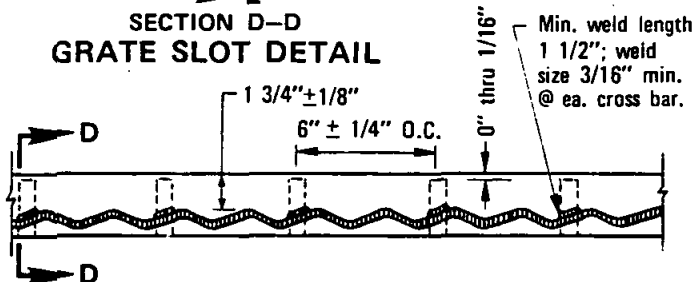
SECTION D-D
GRATE SLOT DETAIL



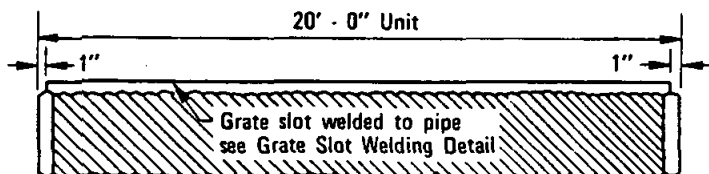
SECTION E-E



METAL CAP DETAIL



GRATE SLOT WELDING DETAIL



GRATE SLOT DRAIN

NOTES

1. Drain seams may be riveted or resistance spotwelded at equal centers, continuous helical lock seam or helical welded seam.
2. Each drain section shall be assembled with standard coupling bands.
3. Cross bar spacer of grate shall be pressure fusion or plug welded to bearing bars in such a manner as to develop the strength of the cross bar spacer.
4. Cross bar spacer (Section E-E) may differ from that shown provided section area is equal or greater.
5. Grate material shall be a weldable grade of steel complying to the requirements of ASTM A 36.
6. The maximum variance from a straight line from the extreme top corners of the bearing bar shall be 1/2" in 20 feet.
7. Installation lengths shall be 10 feet or multiples thereof.
8. Either field joint sealed with a pliable mixture of sand, portland cement and emulsified asphalt (Mixture of 1 part portland cement, 3 - 5 parts sand and 1 1/2 parts SSI emulsified asphalt), or continuous weld.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

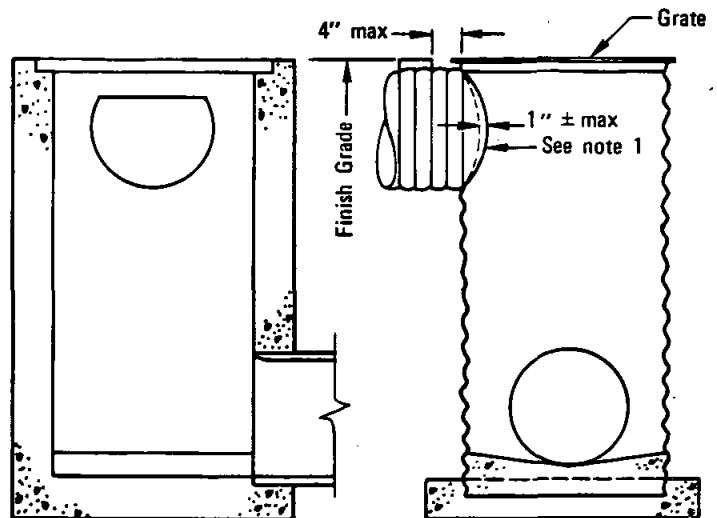
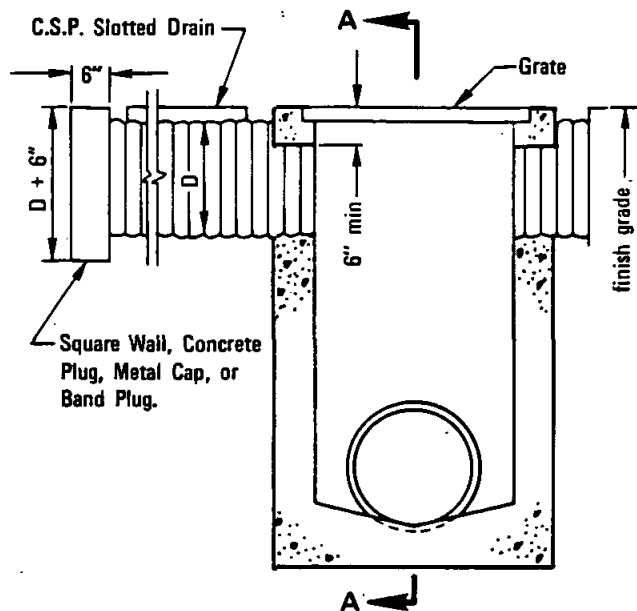
Alfred A. Kuehn Dec. 1975
Coordinator H.C.E. 19807 Date

DRAWING
NUMBER **D-18**

SAN DIEGO REGIONAL STANDARD DRAWING

**SLOTTED CORRUGATED STEEL PIPE DRAIN
12" THROUGH 24"**

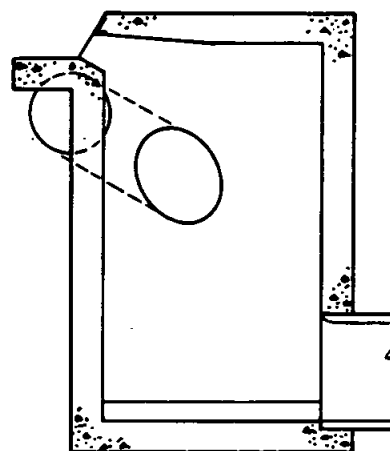
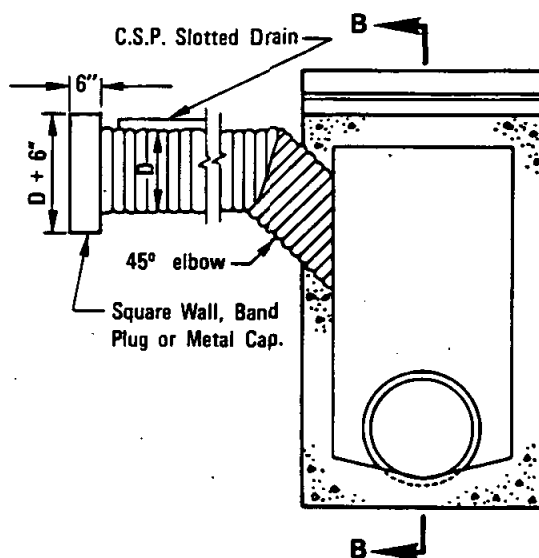
Revision	By	Approved	Date
Sect. D-D	TRP	M.E.	10-82



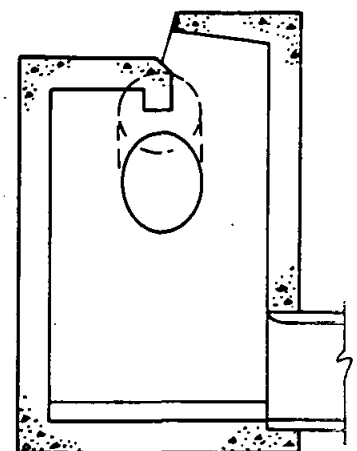
SECTION A-A

CATCH BASIN

C.S.P. INLET



SECTION B-B



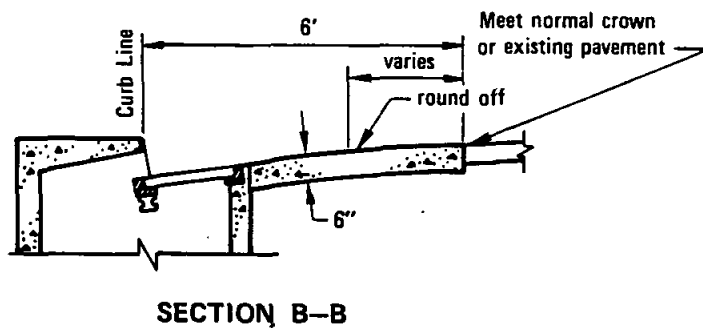
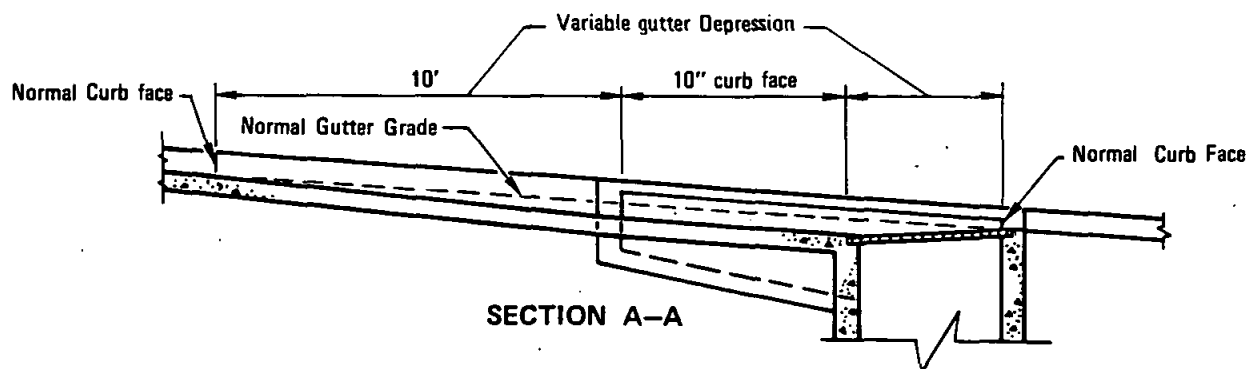
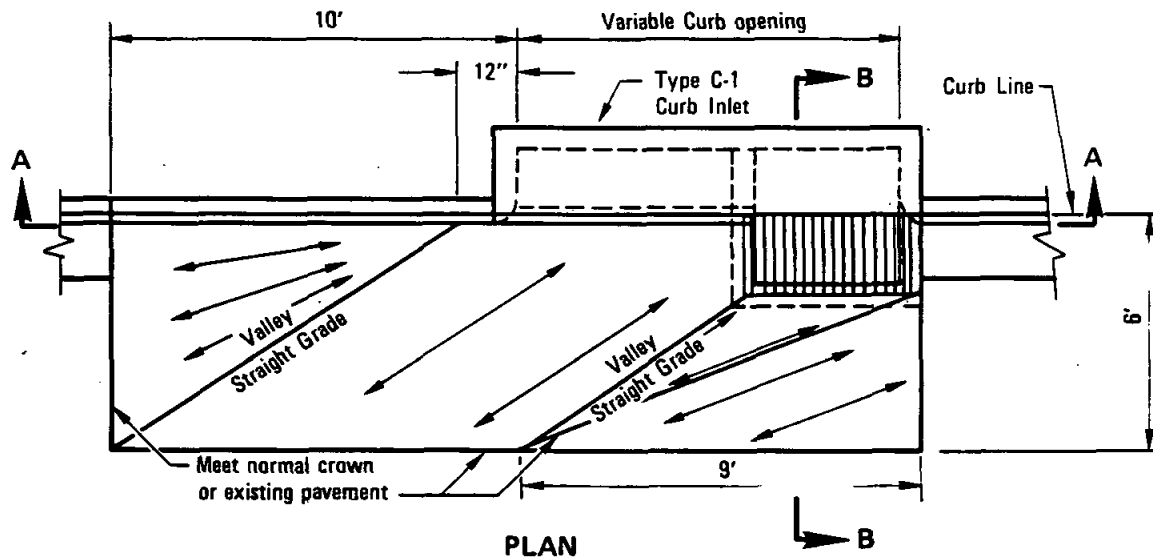
ALTERNATE SECTION B-B

INLETS

NOTES

1. Either field joint with a pliable mixture of sand, portland cement and emulsified asphalt (mixture of 1 part portland cement, 3 - 5 parts sand, and 1 1/2 parts SSI emulsified asphalt), or continuous weld.
2. See Standard Drawing D - 18 for additional notes and details.

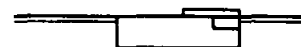
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				SLOTTED DRAIN CONNECTIONS TO STANDARD INLETS		<i>Alfred A. Kneeland</i> Dec. 1975
						Coordinator R.C.E. 19807 Date
						DRAWING NUMBER D-19



NOTES:

1. Curb and apron to be placed monolithically.
2. Use of false header at valleys and slope break line is optional.
3. Extend vertical steel from inlet structure into concrete apron as required.
4. Screed Direction
5. Concrete shall be 520-C-2500

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alvin A. Kuehnel Dec. 1975
Coordinator H.C.C. Date

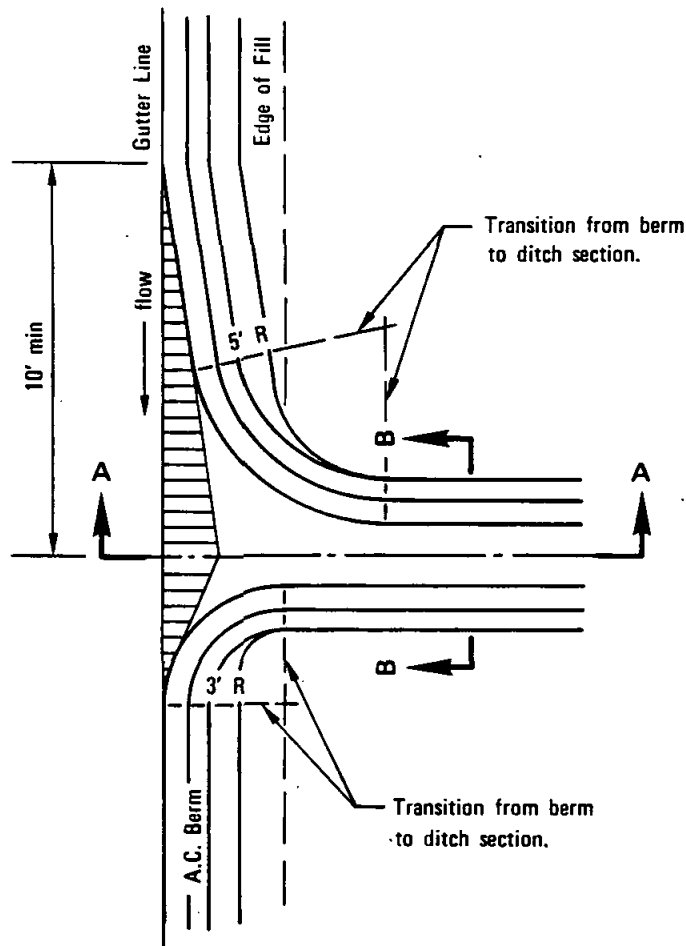
DRAWING
NUMBER **D-20**

SAN DIEGO REGIONAL STANDARD DRAWING

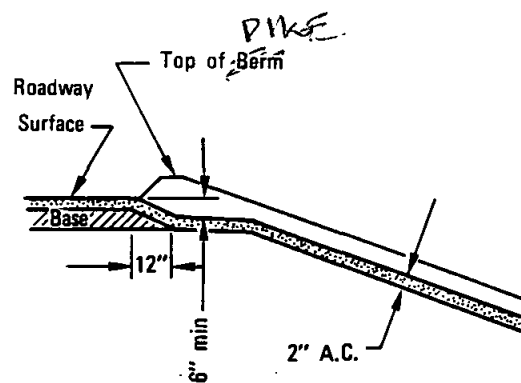
CONCRETE APRON FOR CURB INLET

Revision	By	Approved	Date
Conc.		<i>M.B.</i>	5-86

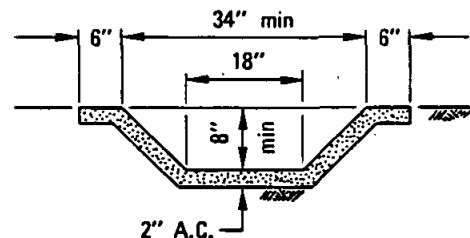
BLANK PAGE



PLAN



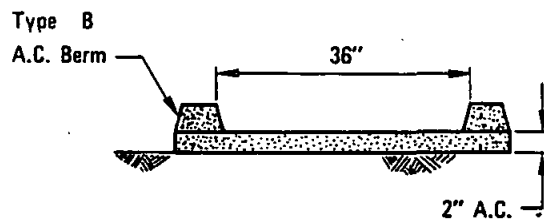
SECTION A-A



NOTE

Cross - sectional area of ditch may be rounded, or trapezoidal.

SECTION B-B

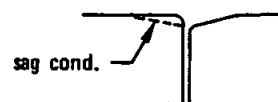


ALTERNATE SECTION B-B

NOTES

1. A.C. spillway may be used when fill is 10' or less, and where fill slope is 1 1/2:1 or flatter.
2. Use 10' min. length of gutter transition on each side of downdrain in sag condition.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

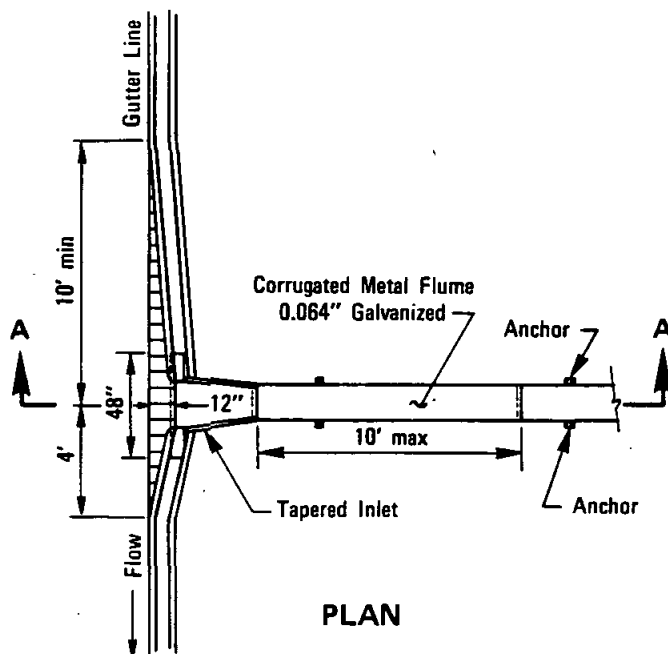
Allan G. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

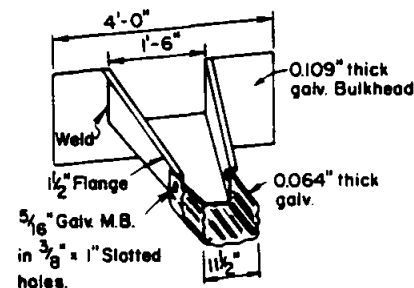
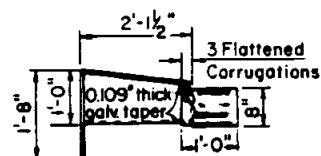
ASPHALT CONCRETE SPILLWAY

Revision	By	Approved	Date
Plan	<i>D. S.</i>		7.79

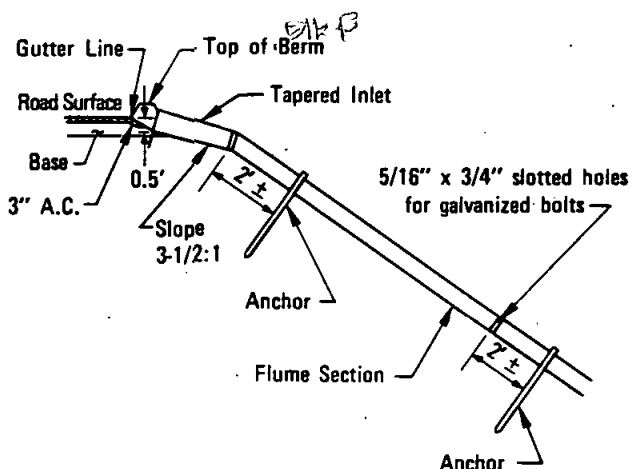
DRAWING NUMBER D-22



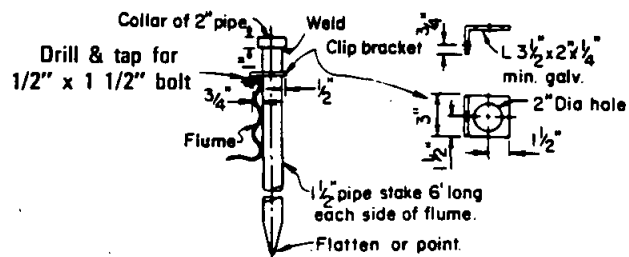
PLAN



TAPERED INLET



SECTION A-A

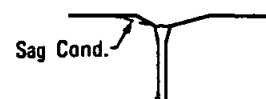


ANCHOR-DETAIL

NOTES

1. Downdrain flume may be used where fill slope is 1 1/2 : 1 or flatter.
2. Use 10' min length of gutter transition on each side of downdrain in sag location.
3. All metal parts to be galvanized after fabrication.

LEGEND ON PLANS



Revision	By	Approved	Date

SAN DIEGO REGIONAL STANDARD DRAWING

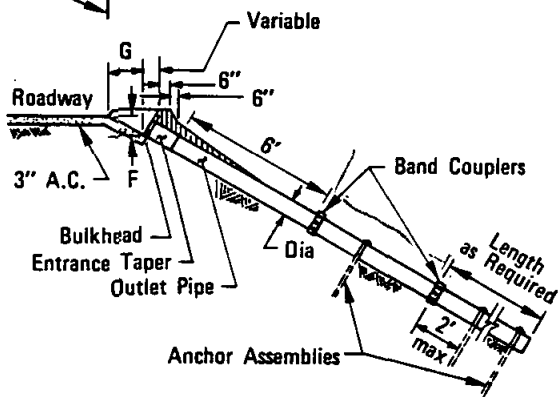
TAPERED INLET AND DOWNDRAIN FLUME

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

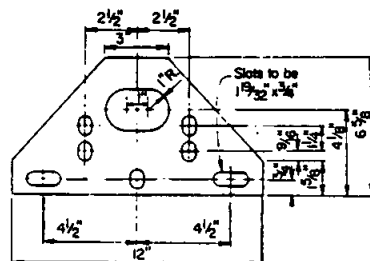
Alfred A. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

D-23



SECTION A-A



Material to be $\frac{1}{4}$ " plate galvanized after fabrication.

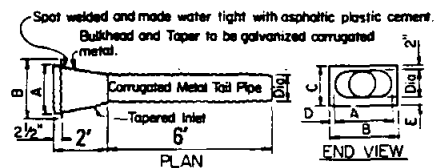
PLATE DETAIL

Dimensions to be as tabulated below for Assembly.

Dia	A	B	C	D	E	F	G	L
8"	16"	25 1/2"	15"	4 3/4"	5"	6"	18"	10"
12"	18"	25 1/2"	19"	3 3/4"	5"	9"	20"	15"
18"	24"	36"	26"	6"	6"	12"	24"	25"

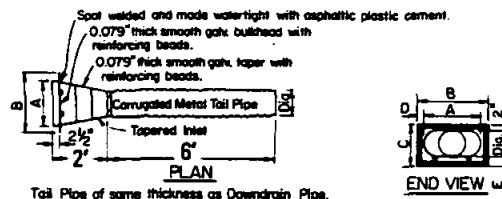
NOTES

1. All metal parts for anchor assemblies shall be galvanized after fabrication.
2. One anchor assembly required per length of pipe. When final length exceeds 10 ft. two anchors shall be required.



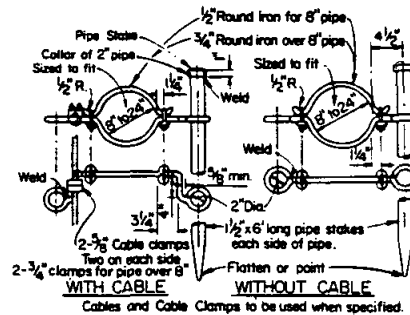
Bulkhead and Taper of same thickness as Tail Pipe with 0.079" Max.
Tail Pipe of same thickness as Downdrain Pipe.

ENTRANCE TAPER— TYPE 1 ALTERNATIVE A

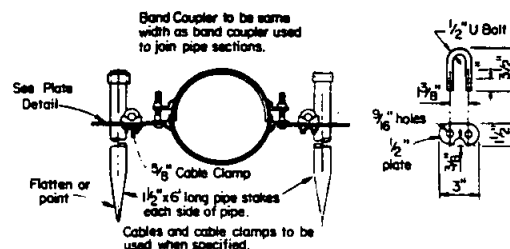


Tail Pipe of same thickness as Downdrain Pipe

ENTRANCE TAPER--TYPE 1 ALTERNATIVE B



ANCHOR ASSEMBLY ALTERNATIVE-A



ANCHOR ASSEMBLY ALTERNATIVE-B

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

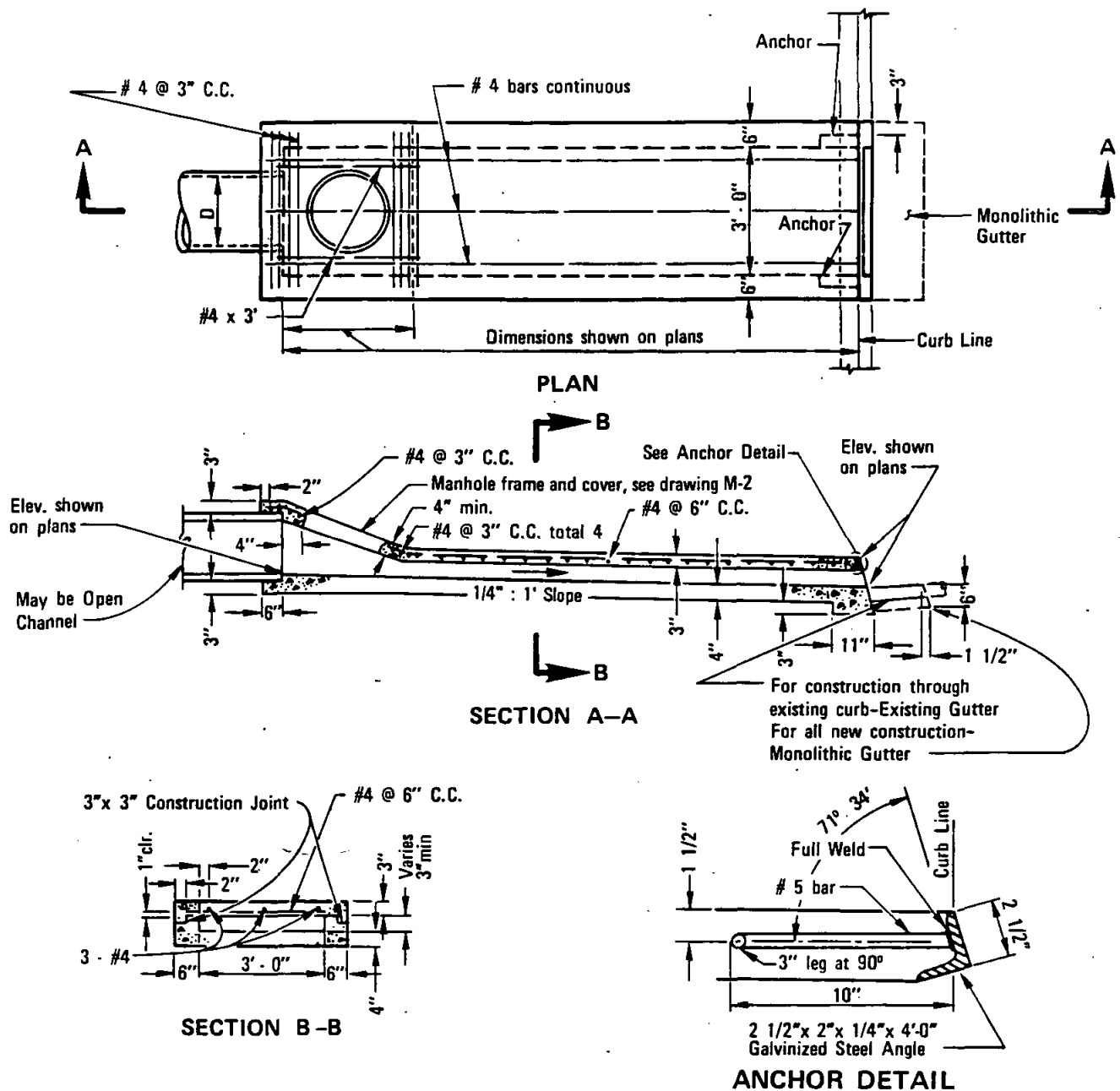
**DRAWING
NUMBER**

D-24

SAN DIEGO REGIONAL STANDARD DRAWING

ENTRANCE TAPER AND DOWNDRAIN PIPE

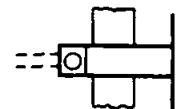
Revision	By	Approved	Date
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NOTES

1. Concrete shall be 560-C-3250
2. D=inside diameter of pipe or depth of channel.
3. Section to be sloped laterally with top conforming to the grades of the existing sidewalk and curb.
4. Manhole frame and cover may be deleted with open channel.
5. Trowel finish top surface and reproduce markings of existing sidewalk and curb.
6. Trowel finish floor of outlet.

LEGEND ON PLANS



Revision	By	Approved	Date
Bar Size	EC	D.S.	7-79
Conc.	EC	M.B.	5-86
Slope	JY	G.S.	5A2

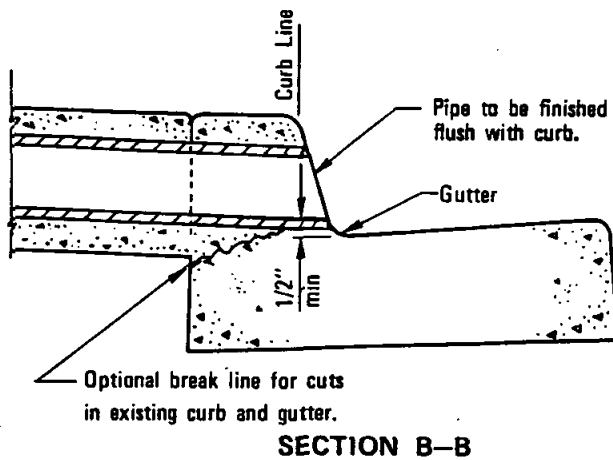
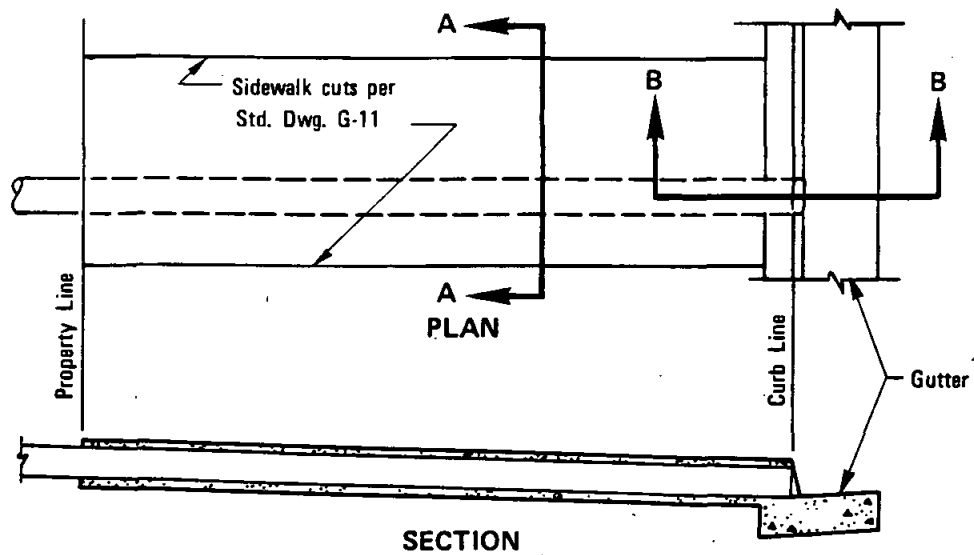
SAN DIEGO REGIONAL STANDARD DRAWING

CURB OUTLET - TYPE A

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

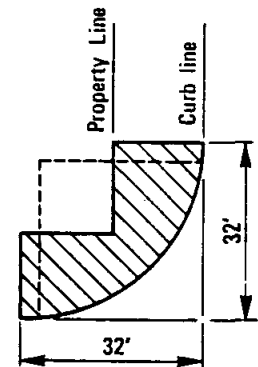
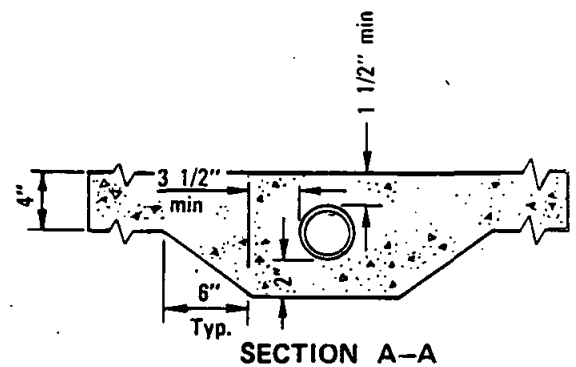
DRAWING
NUMBER **D-25**



APPROVED DRAIN PIPE SIZES	
3"	6" to 8" CURB FACE
4"	8" CURB FACE
6"	10" CURB FACE

NOTES

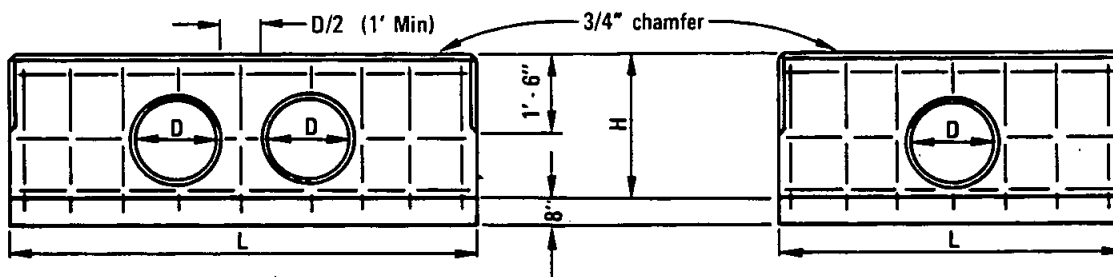
1. Pipe shall be one continuous length from property line to curb line.
2. Multiple pipes to be set a minimum distance of D/2 apart.
3. Concrete shall be 520-C-2500
4. Pipe shall be circular asbestos cement, cast iron or rigid plastic.



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Modif.		M.B.	5-86				
				SIDEWALK UNDERDRAIN PIPE		<i>Allen A. Kersch</i> Dec. 1975 Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER	
						D-27	

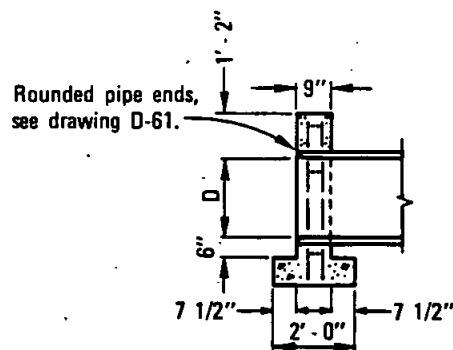


DRAWING NUMBER D-29



ELEVATION DOUBLE HEADWALL

ELEVATION SINGLE HEADWALL



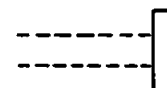
SECTION

D	H	SINGLE			DOUBLE		
		L	Steel Lbs.	Conc. C. Y.	L	Steel Lbs.	Conc. C. Y.
12"	2' - 8"	5' - 0"	35	0.60	8' - 0"	50	0.94
15"	2' - 11"	6' - 0"	40	0.75	9' - 6"	60	1.17
18"	3' - 2"	7' - 0"	50	0.91	10' - 6"	75	1.35
21"	3' - 5"	7' - 6"	60	1.02	11' - 6"	90	1.52
24"	3' - 8"	8' - 6"	75	1.20	12' - 6"	100	1.72
27"	3' - 11"	9' - 6"	85	1.39	14' - 0"	115	2.00
30"	4' - 2"	10' - 0"	85	1.52	15' - 0"	126	2.21
33"	4' - 5"	11' - 0"	100	1.73	16' - 0"	130	2.42
36"	4' - 8"	12' - 0"	105	1.95	17' - 0"	145	2.65
39"	4' - 11"	12' - 6"	130	2.09	18' - 0"	170	2.88
42"	5' - 2"	13' - 6"	140	2.34	19' - 0"	185	3.13
45"	5' - 5"	14' - 6"	150	2.60	20' - 0"	195	3.38
48"	5' - 8"	15' - 0"	160	2.75	21' - 0"	200	3.64
51"	5' - 11"	16' - 0"	180	3.03	22' - 6"	225	4.02
54"	6' - 2"	17' - 0"	190	3.31	23' - 6"	240	4.30

NOTES

- Concrete shall be 560-C-3250
- All reinforcing steel # 4 bars. All vertical and horizontal tie bars 18" maximum spacing.

LEGEND ON PLANS



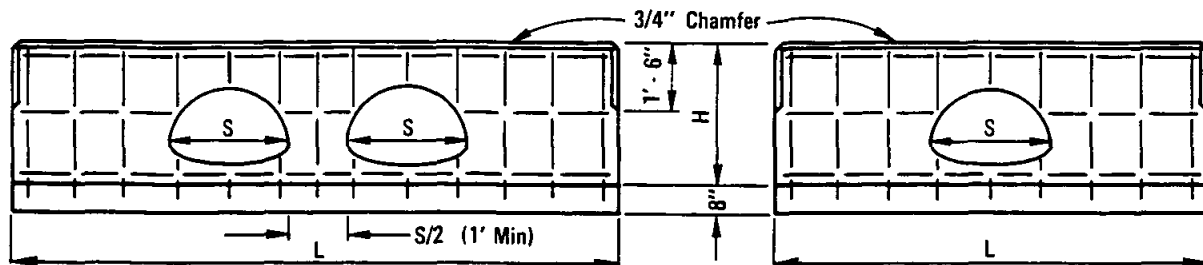
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allard A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE A (CIRCULAR PIPE)

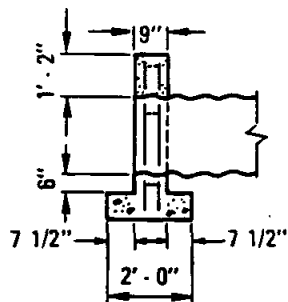
DRAWING
NUMBER **D-30**

Revision	By	Approved	Date
Conc.	<i>SC</i>	<i>M.A.</i>	5-86
Dim. lines	<i>SC</i>	<i>A.H.</i>	7-88



ELEVATION DOUBLE HEADWALL

ELEVATION SINGLE HEADWALL



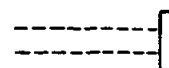
SECTION

C.S.P. ARCH SIZE	H	SINGLE			DOUBLE		
		L	Steel Lbs	Conc Cu. Yds.	L	Steel Lbs	Conc Cu. Yds.
18" x 11"	2' - 7"	5' - 6"	37	0.64	8' - 0"	52	.91
21" x 15"	2' - 11"	6' - 6"	45	0.80	10' - 0"	60	1.22
24" x 18"	3' - 2"	7' - 6"	50	0.96	11' - 6"	70	1.45
28" x 20"	3' - 4"	8' - 6"	60	1.12	13' - 6"	90	1.76
35" x 24"	3' - 8"	10' - 6"	85	1.47	15' - 6"	120	2.16
42" x 29"	4' - 1"	12' - 6"	110	1.76	18' - 0"	145	2.57
49" x 33"	4' - 5"	14' - 6"	130	2.26	21' - 0"	170	3.13
57" x 38"	4' - 10"	17' - 0"	155	2.81	24' - 6"	210	3.86
64" x 43"	5' - 3"	19' - 0"	175	3.31	27' - 0"	230	4.42
71" x 47"	5' - 7"	21' - 0"	195	3.81	30' - 0"	255	5.09

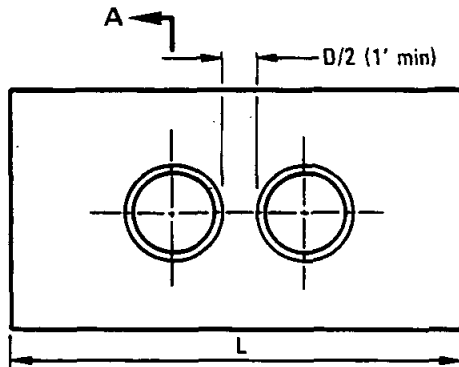
NOTES

- Concrete shall be 560-C-3250
- All reinforcing steel # 4 bars. All vertical and horizontal tie bars 18" maximum spacing.

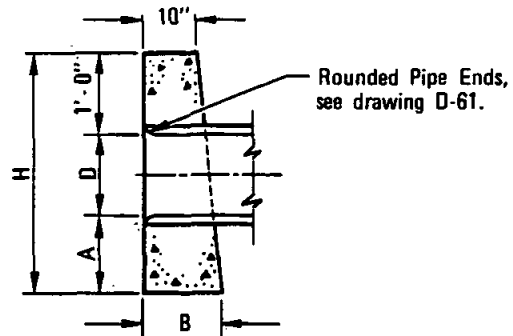
LEGEND ON PLANS



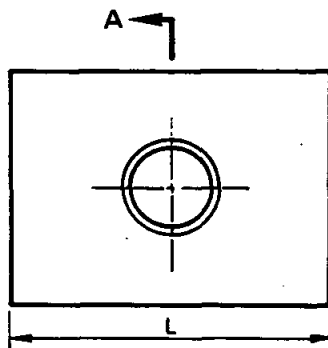
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Conc.	JD	M.B.	5-86				
				STRAIGHT HEADWALL - TYPE A (C.S.P. ARCH)		<i>Allard A. Kerschbaum</i> Dec. 1975 Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER	D-31



DOUBLE PIPE
ELEVATION



SECTION A-A



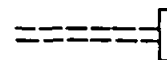
SINGLE PIPE
ELEVATION

D	A	B	H	SINGLE		DOUBLE	
				L	Conc C.Y.	L	Conc C.Y.
12"	2'-0"	1'-0"	4'-0"	4'-0"	.45	5'-8"	.62
15"	2'-0"	1'-1"	4'-3"	5'-0"	.63	7'-1"	.85
18"	2'-0"	1'-2"	4'-6"	6'-0"	.83	8'-6"	1.12
24"	2'-6"	1'-5"	5'-6"	8'-0"	1.54	11'-4"	2.09
30"	2'-6"	1'-9"	6'-0"	10'-0"	2.41	14'-2"	3.26
36"	3'-0"	2'-0"	7'-0"	12'-0"	3.74	17'-0"	5.05

NOTES

1. Concrete shall be 560-C-3250
2. Exposed corners to be chamfered 3/4".

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehn *Dec. 1975*
Coordinator H.C.C. 15807 Date

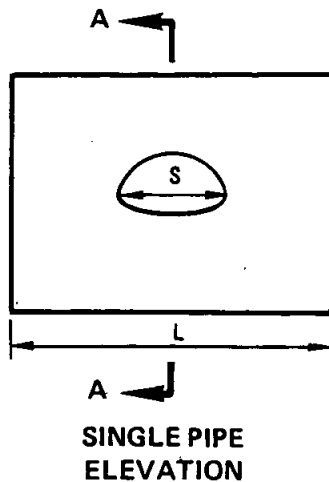
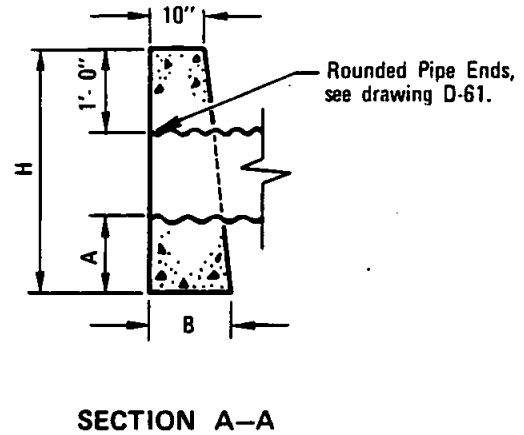
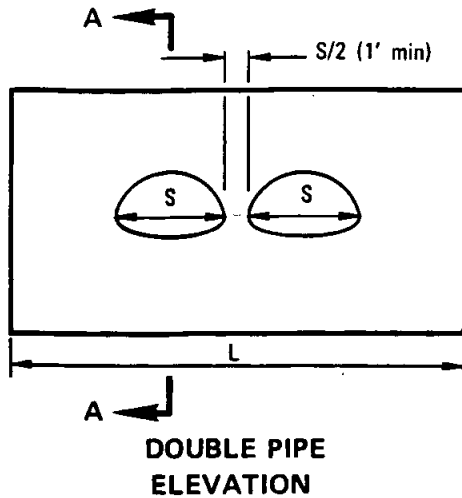
DRAWING
NUMBER

D-32

SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE B (CIRCULAR PIPE)

Revision	By	Approved	Date
Conc.	AC	M.B.	5-86

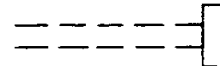


C.S.P. ARCH SIZE	A	B	H	SINGLE		DOUBLE	
				L	Conc C.Y.	L	Conc C.Y.
18"x 11"	2' - 0"	1' - 2"	3' - 11"	6'	0.83	7' - 3"	0.97
21"x 15"	2' - 0"	1' - 4"	4' - 1"	7'	1.08	9' - 8"	1.46
24"x 18"	2' - 0"	1' - 6"	4' - 4"	8'	1.41	11' - 6"	1.98
28"x 20"	2' - 6"	1' - 8"	5' - 0"	9'	1.97	12' - 6"	2.66
35"x 24"	2' - 6"	2' - 0"	5' - 4"	10'	2.56	14' - 5"	3.60

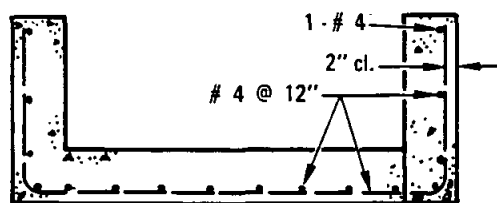
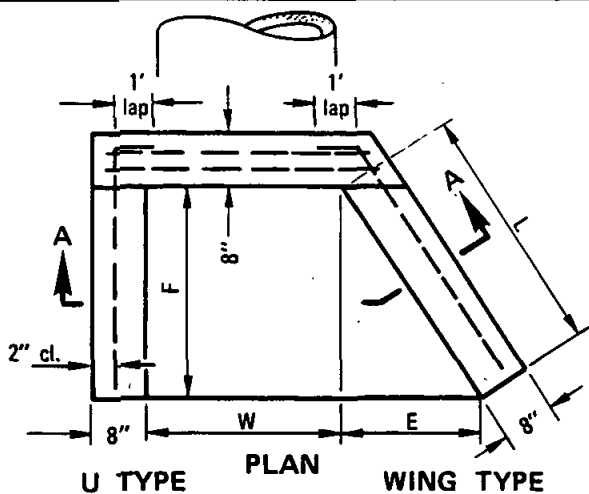
NOTES

1. Concrete shall be 560-C-3250
2. Exposed corners to be chamfered 3/4".

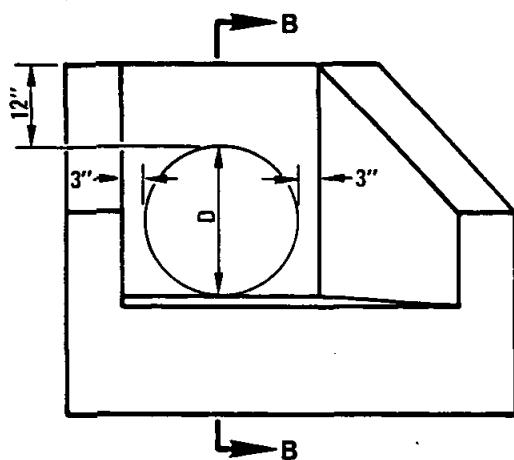
LEGEND ON PLANS



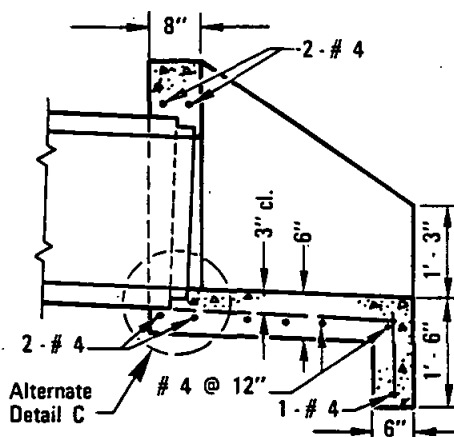
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Conc.	<i>SC</i>	<i>M.B.</i>	<i>5-86</i>		
				STRAIGHT HEADWALL - TYPE B (C.S.P. ARCH)	<i>Allen G. Kershner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date
				DRAWING NUMBER	D-33



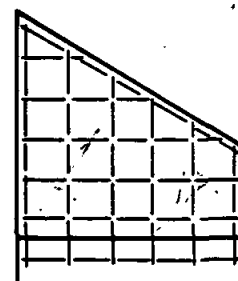
SECTION A-A



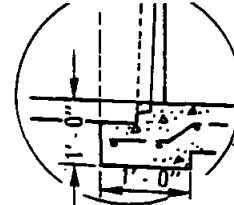
ELEVATION



SECTION B-B



WING WALL REINFORCING



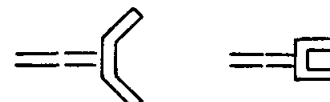
ALT. DETAIL C

DIA OF PIPE	DIMENSIONS			SINGLE PIPE				DOUBLE PIPE					
				U TYPE		WING TYPE		U TYPE		WING TYPE			
	L	E	F	W	CONC	STEEL	CONC	STEEL	W	CONC	STEEL	CONC	STEEL
					C. Y.	LBS.	C. Y.	LBS.		C. Y.	LBS.	C. Y.	LBS.
18"	2'-3 1/8"	1'-3"	1'-10 1/2"	2'-0"	0.55	35	0.63	43	As shown on plans	0.82	53	0.90	61
24"	3'-1 7/8"	1'-9"	2'-7 1/2"	2'-6"	0.79	47	0.93	60		1.22	73	1.36	86
30"	4'-0 5/8"	2'-3"	3'-4 1/2"	3'-0"	1.05	71	1.29	85		1.66	109	1.92	123
36"	4'-11 1/2"	2'-9"	4'-1 1/2"	3'-6"	1.33	88	1.69	114		2.19	136	2.55	162

NOTES:

1. Concrete shall be 560-C-3250
2. Exposed corners to be chamfered 3/4".
3. Multiple pipes to be set a distance of D/2, with a 1' minimum between outside diameters of pipes.
4. Top of headwall shall be placed approximately parallel to profile grade when the grade is 3% or more.
5. Skewed pipes: Dimension W to be increased in width or length due to skew or multiple pipes.
6. For pipe wall thickness greater than 3" use alternate Detail-C.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

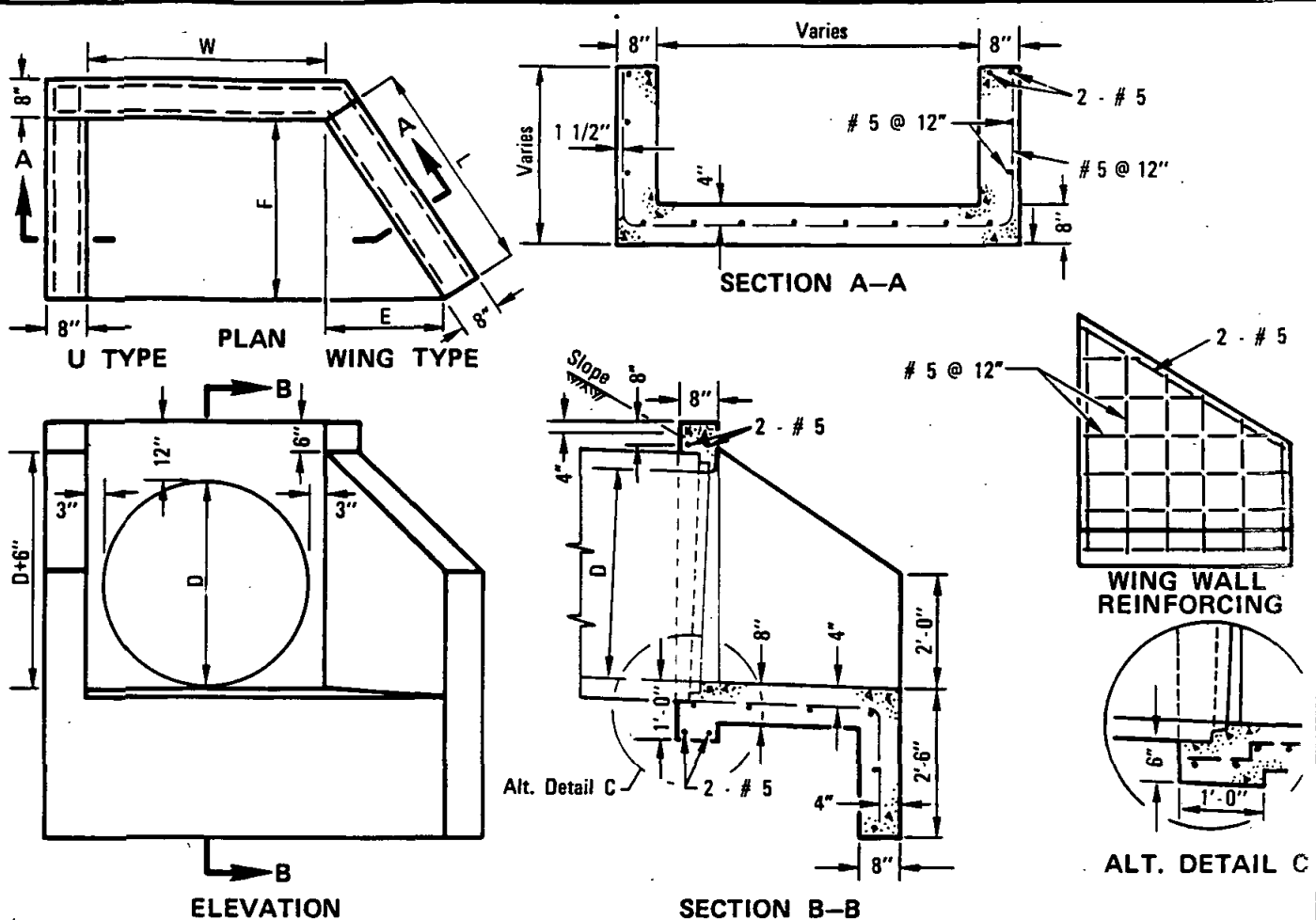
Allen A. Keenland Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-34**

SAN DIEGO REGIONAL STANDARD DRAWING

**WING AND U TYPE HEADWALLS
FOR 12" TO 36" PIPES**

Revision	By	Approved	Date
Conc.	<i>W.B.</i>	<i>M.B.</i>	5-86



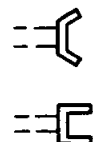
DIA. OF PIPE	DIMENSIONS			SINGLE PIPE						DOUBLE PIPE					
				W	U TYPE		WING TYPE		W	U TYPE		WING TYPE			
	L	E	F		CONC.	STEEL	CONC.	STEEL		CONC.	STEEL	CONC.	STEEL		
														C.Y.	LBS.
42"	3'-7 1/4"	2'-0"	3'-0"	4'-0"	1.57	117	1.90	135	AS SHOWN ON PLANS	2.69	190	3.16	214		
48"	4'-6"	2'-6"	3'-9"	4'-6"	1.97	153	2.48	184		3.43	252	4.06	288		
54"	5'-4 7/8"	3'-0"	4'-6"	5'-0"	2.41	190	3.07	246		4.24	319	5.06	368		
60"	6'-3 3/4"	3'-6"	5'-3"	5'-6"	2.88	239	3.75	294		5.13	386	6.17	442		
66"	7'-2 1/2"	4'-0"	6'-0"	6'-0"	3.38	294	4.52	356		6.08	454	7.20	516		
72"	8'-1 3/8"	4'-6"	6'-9"	6'-6"	3.93	368	5.52	417		7.11	522	8.30	588		
78"	9'-0"	5'-0"	7'-6"	7'-0"	4.50	444	6.70	503		8.20	595	9.50	693		
84"	9'-10 3/4"	5'-6"	8'-3"	7'-6"	5.21	540	8.15	619		9.50	687	10.80	786		

Note: Dimensions E and L apply to wing type only.

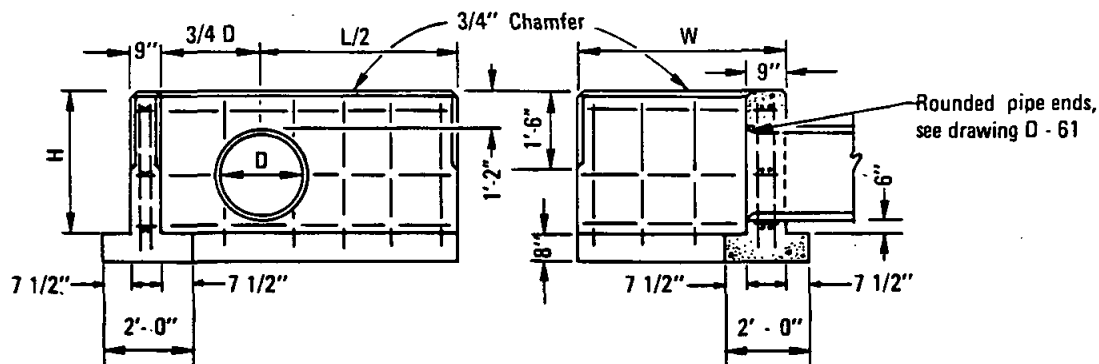
NOTES

1. Skewed Pipes: Dimension W to be increased to take care of increased width or length due to skew of multiple pipes.
2. Tops of headwalls, on grade culverts, shall be placed parallel to profile grade when the grades are 3% or more.
3. Concrete shall be 560-C-3250
4. Exposed corners shall be chamfered 3/4".
5. Multiple pipes shall be set a distance of D/2, with a 1' minimum, between outside diameters of pipes.
6. For pipe wall thickness greater than 3" use Alternate Detail-C.

LEGEND ON PLANS

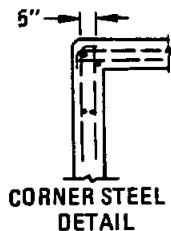


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Conc.	EC	M.B.	5-86				
				WING AND U TYPE HEADWALLS FOR 42" TO 84" PIPES		<i>Allan A. Kuehn</i> Dec. 1975 Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER D-35	



ELEVATION

SECTION

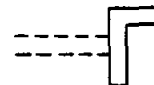


D	H	L/2	LENGTH OF W									
			3' - 4"		4' - 10"		6' - 4"		7' - 10"		9' - 4"	
			Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.
12"	2' - 8"	2' - 6"	50	.79	60	.98						
15"	2' - 11"	3' - 0"	55	.91	65	1.11						
18"	3' - 2"	3' - 6"	65	1.04	75	1.25						
21"	3' - 5"	3' - 9"	75	1.15	90	1.36						
24"	3' - 8"	4' - 3"	85	1.29	100	1.51	110	1.74				
27"	3' - 11"	4' - 9"	90	1.44	105	1.67	115	1.91				
30"	4' - 2"	5' - 0"	95	1.55	110	1.80	120	2.05	135	2.29		
33"	4' - 5"	5' - 6"	105	1.71	120	1.97	135	2.23	150	2.48		
36"	4' - 8"	6' - 0"	110	1.88	125	2.15	140	2.41	155	2.68	170	2.95
39"	4' - 11"	6' - 3"			150	2.28	170	2.56	185	2.84	200	3.12
42"	5' - 2"	6' - 9"			155	2.42	175	2.76	190	3.05	210	3.34
45"	5' - 5"	7' - 3"					180	2.97	200	3.27	215	3.57
48"	5' - 8"	7' - 6"					190	3.13	216	3.44	230	3.75
51"	5' - 11"	8' - 0"							220	3.67	235	3.99
54"	6' - 2"	8' - 6"							235	3.91	250	4.24

NOTES

1. Concrete shall be 560-C-3250
2. All reinforcing steel # 4 bars. All vertical and horizontal tie bars 18" maximum spacing.
3. When multiple pipes are used, the distance between pipes shall be D/2 (1' min.). Dimension L/2 is from the center of the pipe nearest to the end of the headwall as shown.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

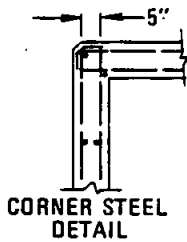
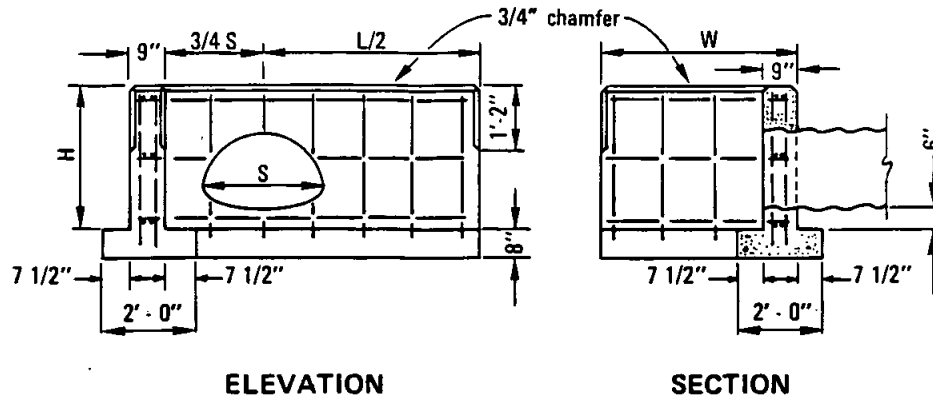
DRAWING
NUMBER

D-36

SAN DIEGO REGIONAL STANDARD DRAWING

L TYPE HEADWALLS
CIRCULAR PIPES

Revision	By	Approved	Date
Conc.	SC	M.B.	5-86

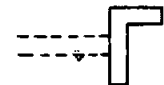


C.S.P. ARCH SIZE	H	L/2	LENGTH OF W									
			3' - 4"		4' - 10"		6' - 4"		7' - 10"		9' - 4"	
			Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.
18"x 11"	2'-7"	2'-9"	50	0.84	60	1.03	70	1.21	80	1.39	90	1.57
21"x 15"	2'-11"	3'-3"	60	1.00	65	1.18	75	1.38	90	1.58	100	1.77
24"x 18"	3'-2"	3'-9"	60	1.07	70	1.32	80	1.53	95	1.74	110	1.94
28"x 20"	3'-4"	4'-3"	70	1.26	80	1.47	90	1.68	100	1.90	115	2.11
35"x 24"	3'-8"	5'-3"	100	1.51	110	1.74	120	1.97	140	2.20	155	2.42
42"x 29"	4'-1"	6'-3"	115	1.82	130	2.06	140	2.31	155	2.55	170	2.83
49"x 33"	4'-5"	7'-3"	130	2.12	145	2.37	155	2.64	170	2.90	185	3.15
57"x 38"	4'-10"	8'-6"	145	2.52	160	2.79	175	3.07	190	3.35	205	3.61
64"x 43"	5'-3"	9'-6"	185	2.89	200	3.11	215	3.48	235	3.77	250	4.06
71"x 47"	5'-7"	10'-6"	200	3.25	215	3.56	235	3.86	250	4.17	270	4.48

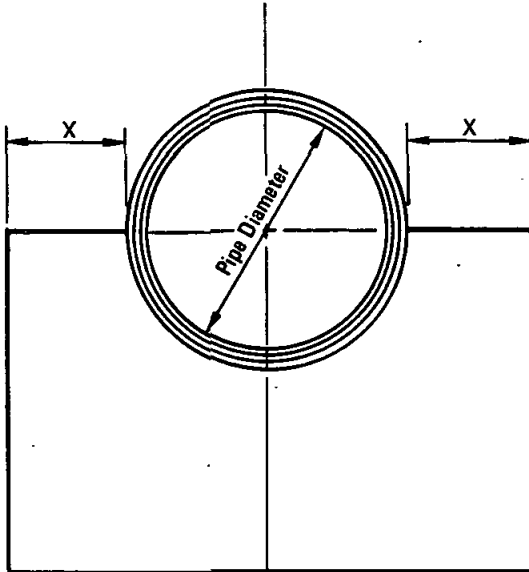
NOTES

- Concrete shall be 560-C-3250
- All reinforcing steel # 4 bars. All vertical and horizontal tie bars 18" maximum spacing.
- When multiple pipes are used, the distance between pipes shall be S/2 (1' min.). The dimension L/2 is from the center of the pipe nearest to the end of the headwall as shown.

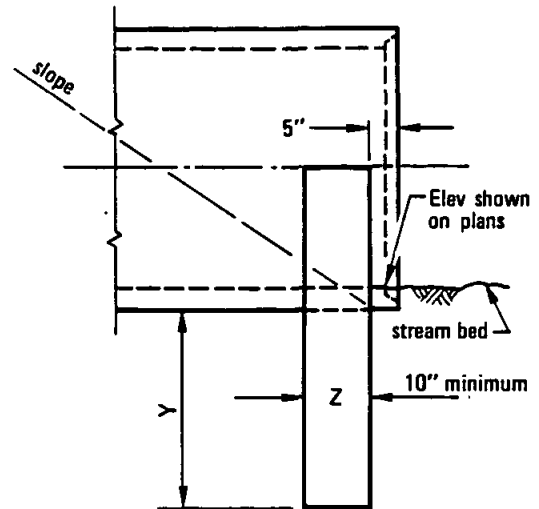
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Elev.	SC	D.S.	7-79						
Conc.	SC	M.B.	5-86	L TYPE HEADWALLS (C.S.P. ARCH)				<i>Allen G. Kershner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	
								DRAWING NUMBER	
								D-37	



FACE ELEVATION



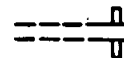
SIDE ELEVATION

PIPE DIAMETER	X	Y	Z
12" to 24"	1' - 0"	2' - 0"	10"
21" to 36"	1' - 6"	2' - 6"	12"
39" to 48"	2' - 0"	3' - 0"	12"
51" to 60"	2' - 6"	3' - 0"	14"
63" & Larger	3' - 0"	3' - 0"	14"

NOTES:

1. A curtain wall shall be used in place of a headwall at culvert ends where extension of the culvert is considered imminent or no fill is retained.
2. Concrete shall be 560-C-3250
3. Keep the pipe-end clear of obstructions to permit easy placing of culvert extension.

LEGEND ON PLANS



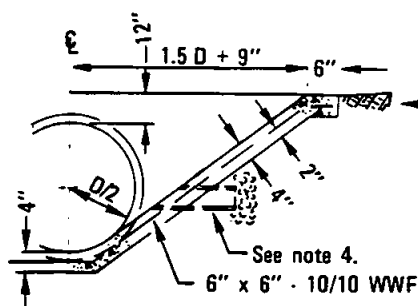
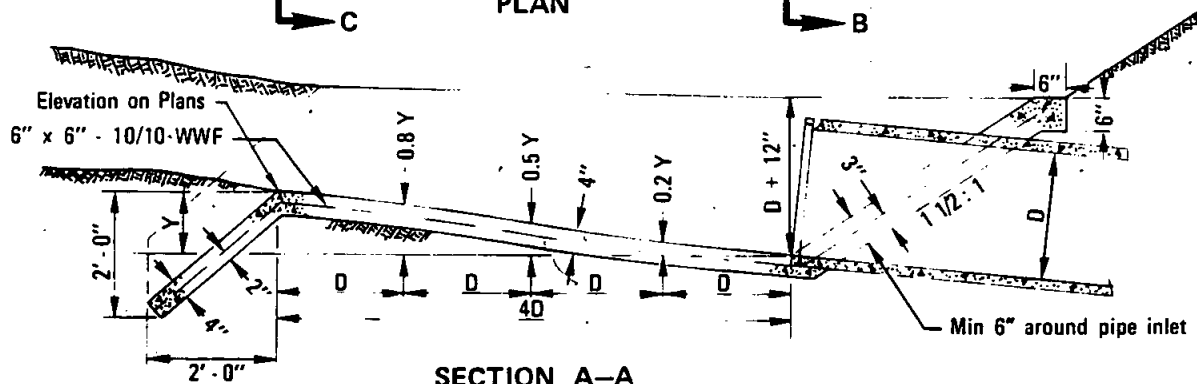
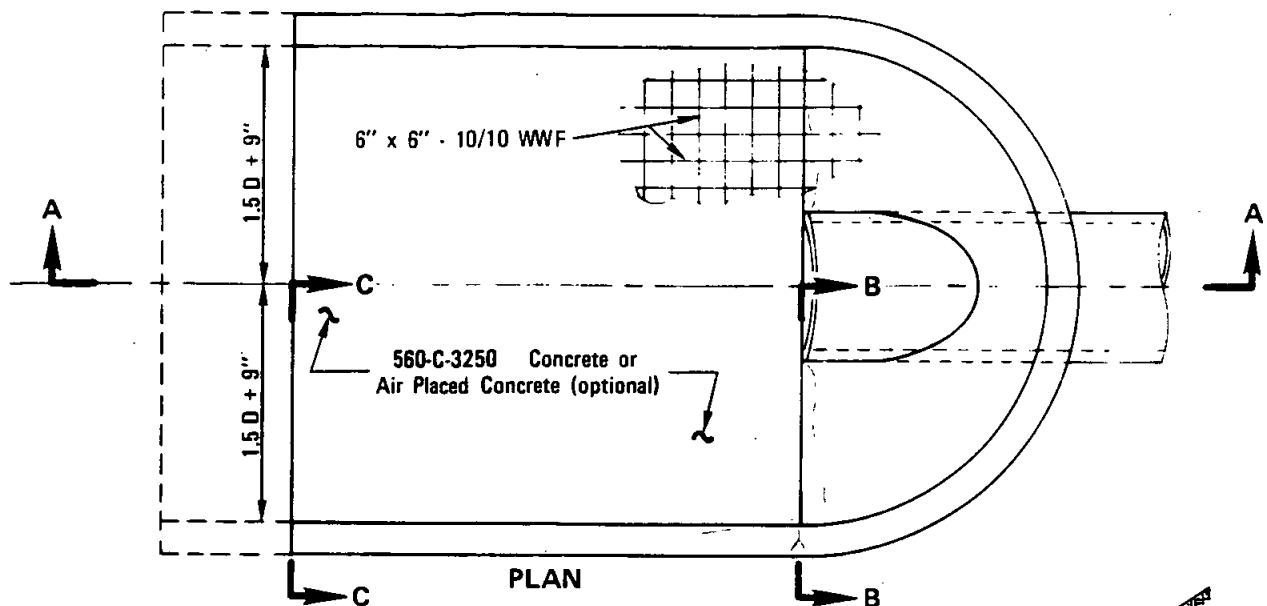
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allen O. Kerschbaum Dec. 1975
Coordinator R.C.C. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

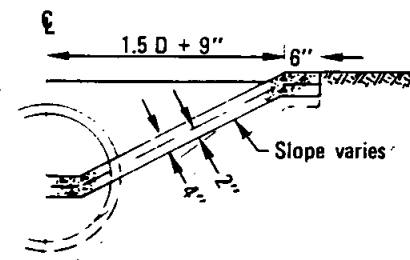
CURTAIN WALL

Revision	By	Approved	Date
Conc.	2	M.B.	5-86

**DRAWING
NUMBER** **D-38**



Inlet constr.
sym. about Q
except for
multiple pipe
installations
(see note 1)



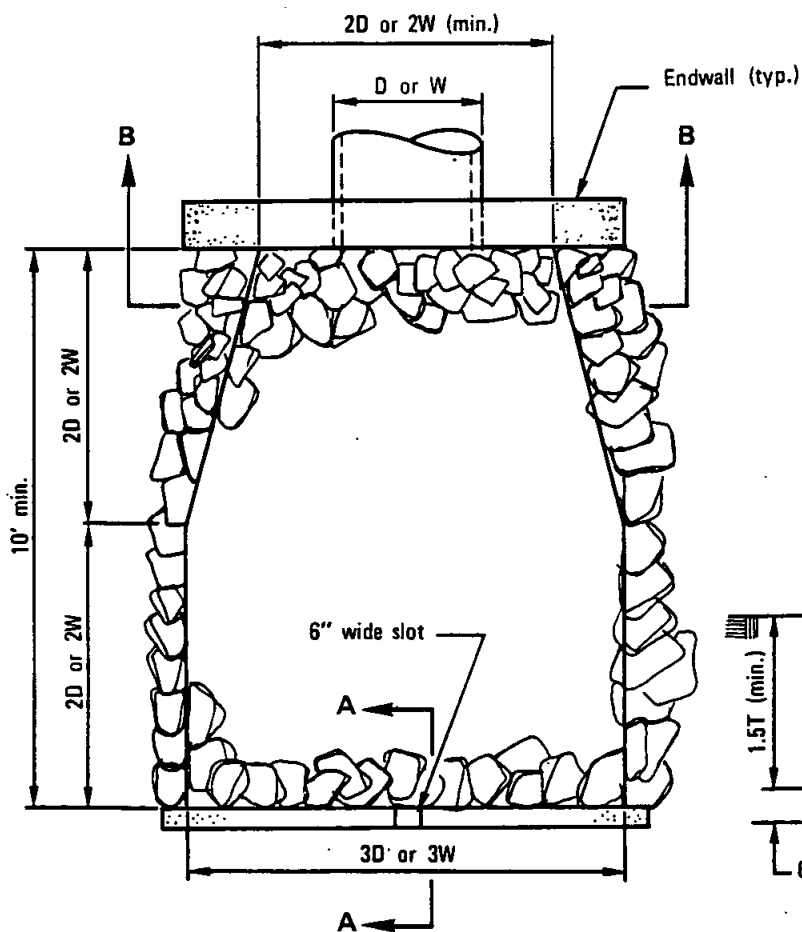
NOTES

1. When more than one pipe is used the profile view shown shall hold for the distance across all pipe openings. Sections A-A and B-B shall be from the outermost pipe. The distance between pipes shall be $D/2$ for round and $\text{Span}/3$ for arch pipe. (12" minimum)
2. Culvert shall be cut off even with apron surface when required by the Agency.
3. Use Inlet Apron only where a flared end section can not be utilized.
4. Place weep holes when required by the Agency.

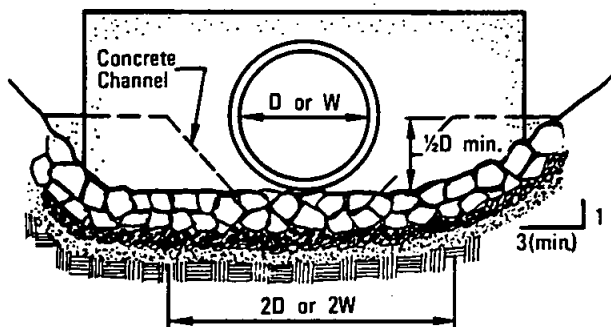
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Sec. A-A	DS	DS	7-79	INLET APRON FOR CULVERTS UP TO 42" DIAMETER		Coordinator R.C.E. 19807	Date
Sect. B-B	TRP	M.B.	10-82				
Conc.	RA	M.B.	5-86				
						DRAWING NUMBER	D-39

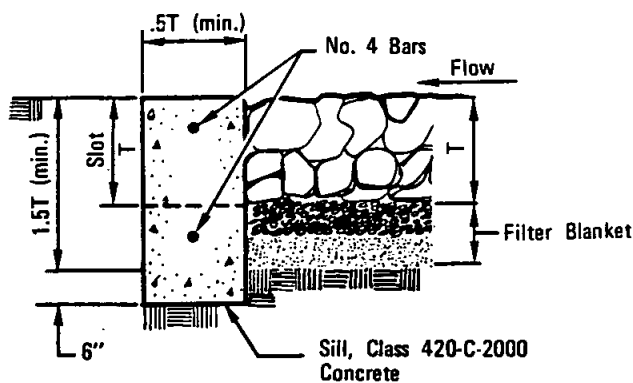


PLAN



SECTION B-B

D = Pipe Diameter
W = Bottom Width of Channel



SECTION A-A

NOTES:

- Plans shall specify:
 - Rock class and thickness (T).
 - Filter material, number of layers and thickness.
- Rip rap shall be either quarry stone or broken concrete (if shown on the plans.) Cobbles are not acceptable.
- Rip rap shall be placed over a filter blanket which may be either granular material or plastic filter cloth.
- See standard special provisions for selection of rip rap and filter blanket.
- Rip rap energy dissipators shall be designated as either Type 1 or Type 2. Type 1 shall be with concrete sill; Type 2 shall be without sill.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

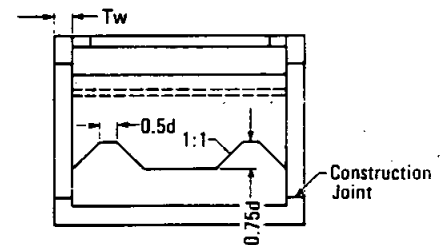
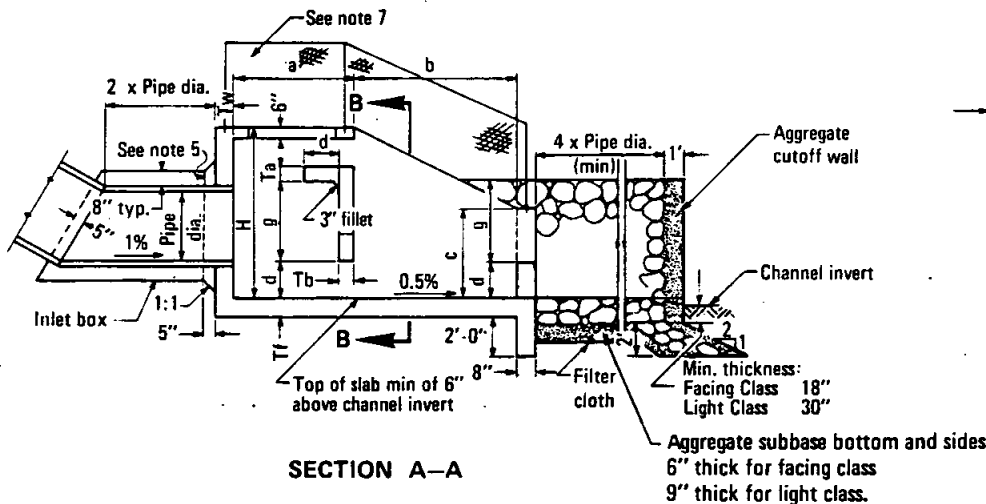
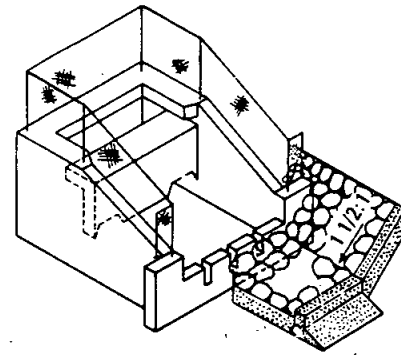
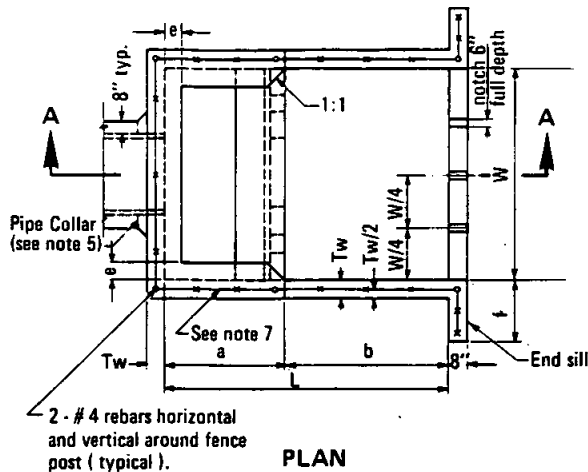
Allen D. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-40**

SAN DIEGO REGIONAL STANDARD DRAWING

**RIP RAP
ENERGY DISSIPATOR**

Revision	By	Approved	Date
Sill, filter	KP	M.B.	10-82

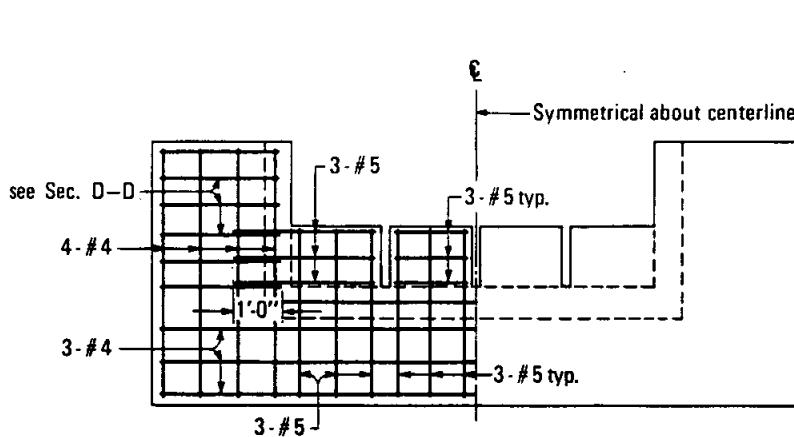


NOTES

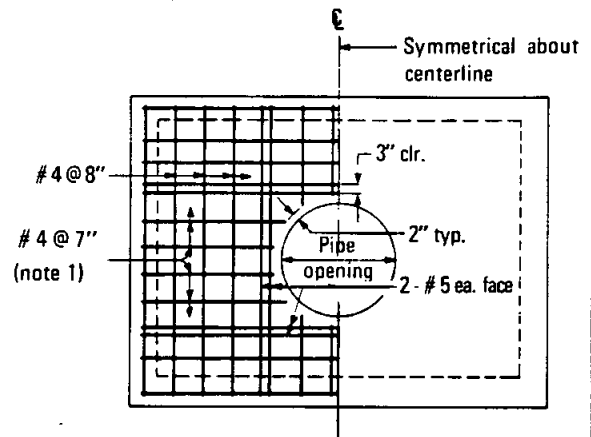
- Design:
 - Equivalent Fluid Pressure = 60 p.c.f.
 - Maximum Outlet Velocity = 35 f.p.s.
- Concrete shall be 560-C-3250
- Reinforcing shall conform to ASTM designation A615 and may be grade 40 or 60. Reinforcing shall be placed with 2" clear concrete cover unless noted otherwise. Splices shall not be permitted except as indicated on the plans.
- For pipe grades not exceeding 20%, inlet box may be omitted.
- If inlet box is omitted, construct pipe collar as shown.
- Unless noted otherwise, all reinforcing bar bends shall be fabricated with standard hooks.
- Five foot high chain link fencing, embed post 18" deep in walls and encase with Class B mortar.
- In Sandy and Silty soil:
 - Riprap and aggregate base cutoff wall required at the end of rock apron.
 - Filter cloth (Polyfilter X or equivalent) shall be installed on native soil and base, minimum of 1 ft. overlaps at joints.
- Rip rap and subbase classification shall be as shown on plans.

Pipe Dia (in)	18	24	30	36	42	48	54	60	72
Area (sq.ft.)	1.77	3.14	4.91	7.07	9.62	12.57	15.90	19.63	28.27
Max. Q (cfs)	21	38	59	85	115	151	191	236	339
W	5' - 6"	6' - 9"	8' - 0"	9' - 3"	10' - 6"	11' - 9"	13' - 0"	14' - 3"	16' - 6"
H	4' - 3"	5' - 3"	6' - 3"	7' - 3"	8' - 0"	9' - 0"	9' - 9"	10' - 9"	12' - 3"
L	7' - 4"	9' - 0"	10' - 8"	12' - 4"	14' - 0"	15' - 8"	17' - 4"	19' - 0"	22' - 0"
a	3' - 3"	3' - 11"	4' - 7"	5' - 3"	6' - 0"	6' - 9"	7' - 4"	8' - 0"	9' - 3"
b	4' - 1"	5' - 1"	6' - 1"	7' - 1"	8' - 0"	8' - 11"	10' - 0"	11' - 0"	12' - 9"
c	2' - 4"	2' - 10"	3' - 4"	3' - 10"	4' - 5"	4' - 11"	5' - 5"	5' - 11"	6' - 11"
d	0' - 11"	1' - 2"	1' - 4"	1' - 7"	1' - 9"	2' - 0"	2' - 2"	2' - 5"	2' - 9"
e	0' - 6"	0' - 6"	0' - 8"	0' - 8"	0' - 10"	0' - 10"	1' - 0"	1' - 0"	1' - 3"
f	1' - 6"	2' - 0"	2' - 6"	3' - 0"	3' - 0"	3' - 0"	3' - 0"	3' - 0"	3' - 0"
g	2' - 1"	2' - 6"	3' - 0"	3' - 6"	3' - 11"	4' - 5"	4' - 11"	5' - 4"	6' - 2"
Tf	8"		10"		12"				
Tb	7"		9 1/2"		10 1/2"				
Tw	7"		9 1/2"		10 1/2"				
Ta	7"				8"				

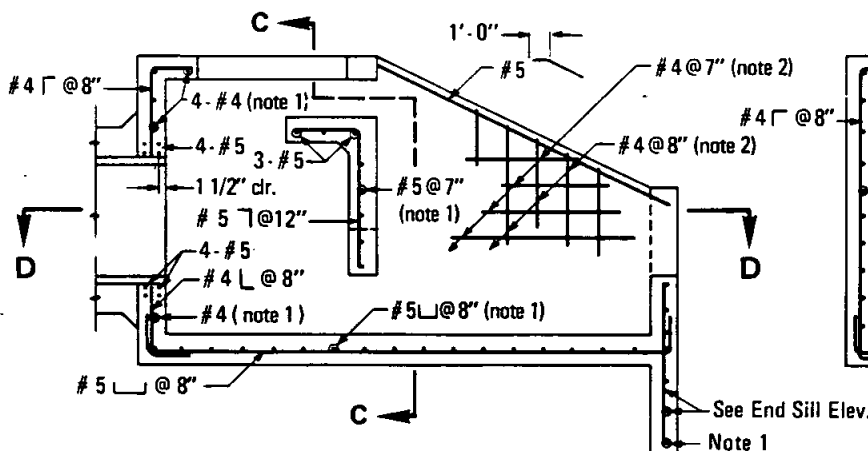
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING CONCRETE ENERGY DISSIPATOR	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Allan A. Kuehn</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date
Note 9	SC	D.S.	7-79		
Conc.	SC	M.B.	5-80		
				DRAWING NUMBER	D-41



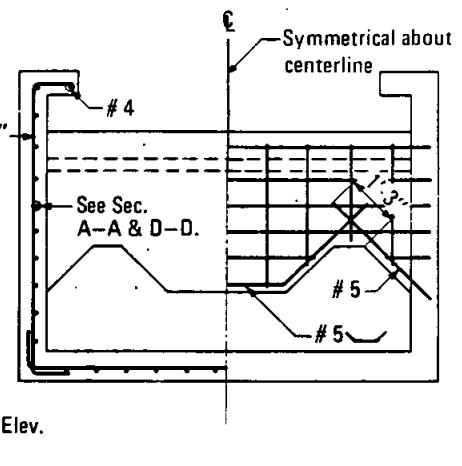
END SILL ELEVATION



HEADWALL ELEVATION



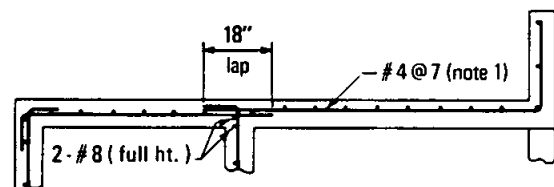
SECTION A-A



SECTION C-C

NOTES

1. Place reinforcing, as noted, at center wall (or slab).
2. Match location of reinforcing with that in headwall, end sill and foundation slab.
3. All reinforcing shall be placed with 2" concrete cover, unless noted otherwise.



SECTION D-D

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

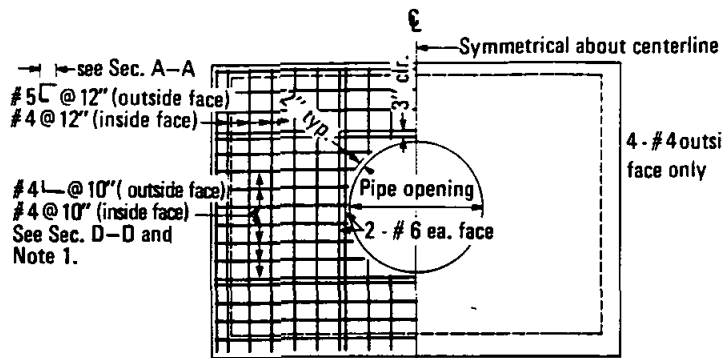
Allan O. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-42**

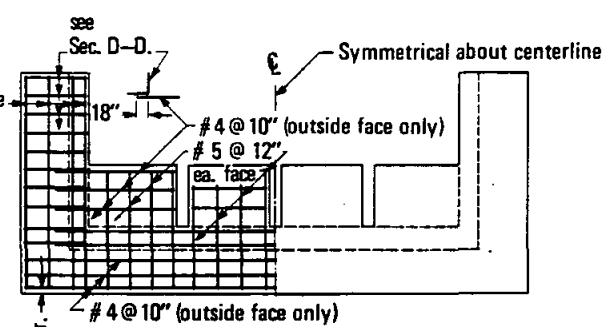
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE ENERGY DISSIPATOR
(REINFORCEMENT)
18" TO 30" DIAMETER PIPE**

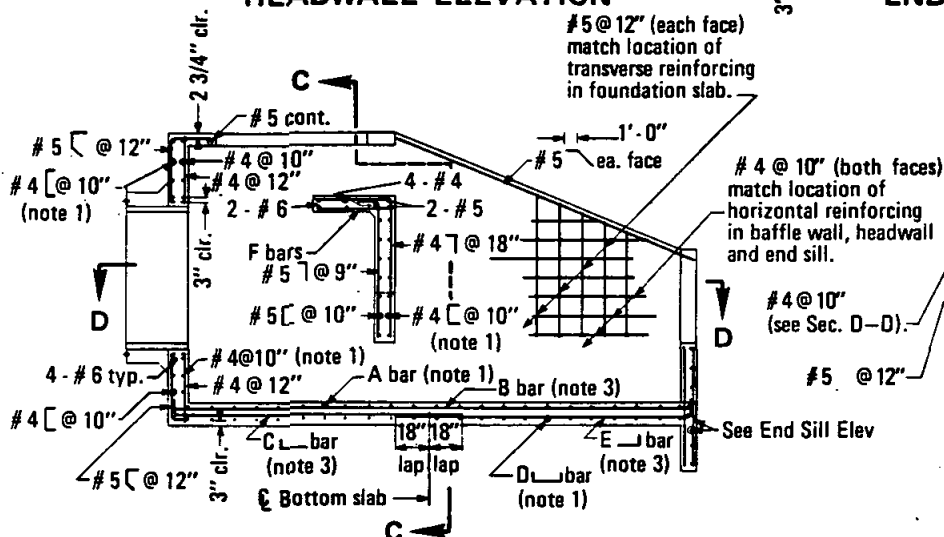
Revision	By	Approved	Date



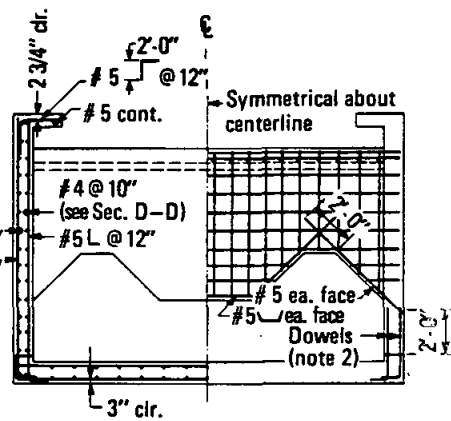
HEADWALL ELEVATION



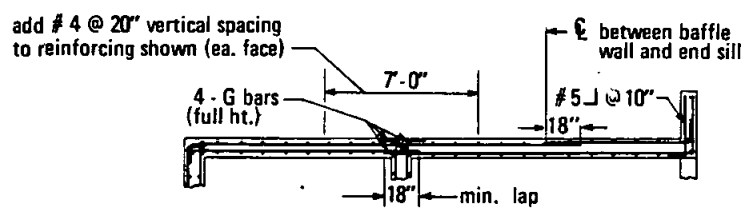
END SILL ELEVATION



SECTION A-A



SECTION C-C



SECTION D-D

NOTES

1. Match location of sidewall reinforcing.
2. Dowels having same size and spacing as wall reinforcing may be used in lieu of continuous bars at contractors option.
3. Match location of headwall or end sill reinforcing.

Pipe dia. (in.)	36	42	48	54	60	72
A bar	# 5 @ 12"	# 6 @ 12"	# 7 @ 12"			
B bar	# 5 @ 12"	# 6 @ 12"				
C bar	# 4 @ 12"	# 5 @ 12"				
D bar	# 4 @ 12"	# 5 @ 12"	# 6 @ 12"			
E bar	# 4 @ 12"	# 5 @ 12"				
F bar	# 4 @ 9"	# 5 @ 9"	# 6 @ 9"			
G bar		# 7			# 11	

Revision	By	Approved	Date

SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE ENERGY DISSIPATOR
(REINFORCEMENT)**

36" TO 72" DIAMETER PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen O. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

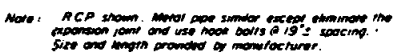
DRAWING NUMBER D-43



If at upstream end, fillet is not shown



PART LONGITUDINAL SECTION



Use where additional protection to toe of embankment is required. If at upstream end, filter is not shown.



Where abrasion is anticipated, increase apron thickness to 7" min to provide 2" min reinforcement coverage

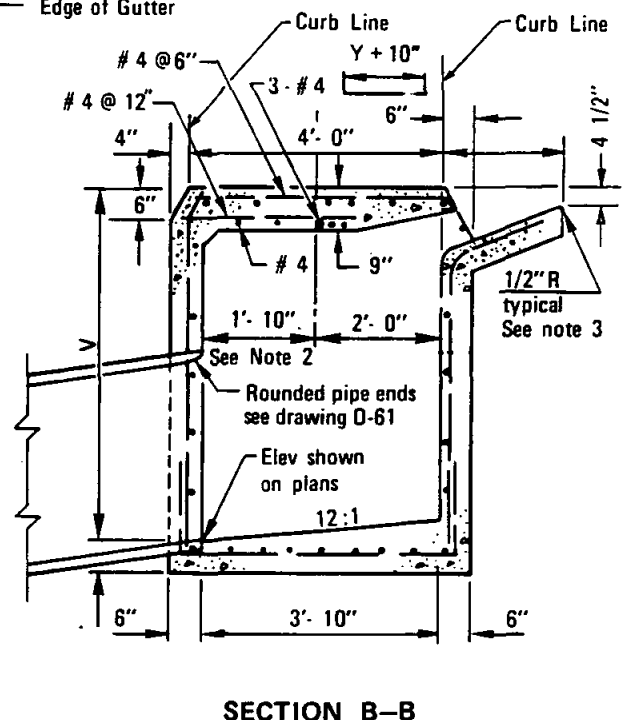
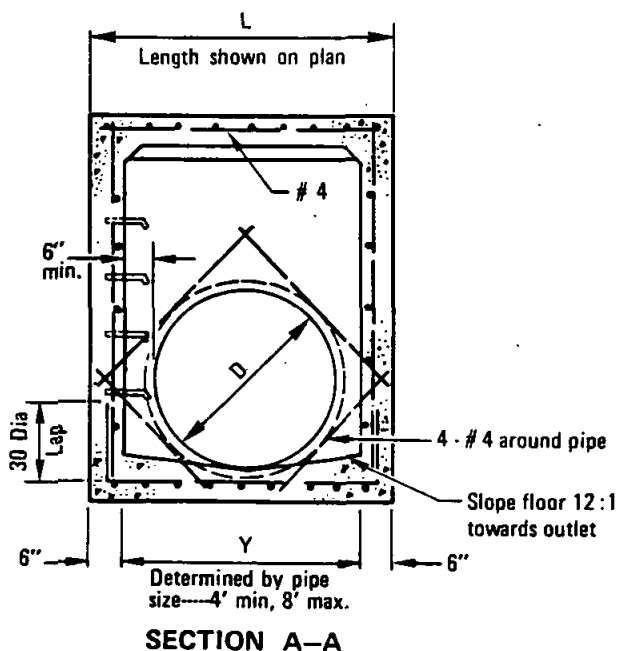
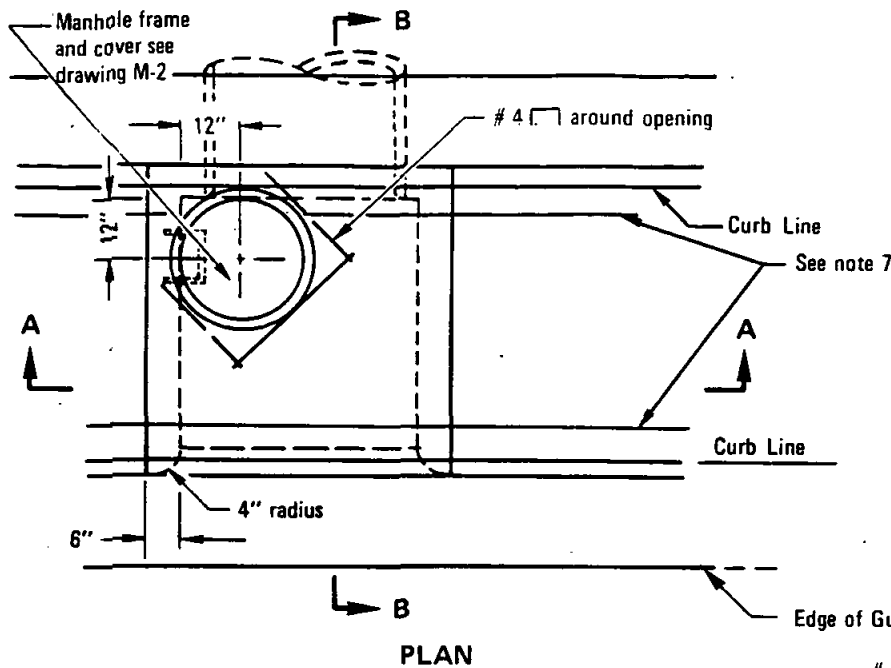
[illegible]

Notes: Walls designed for 2 surcharge; earth load = 120#/cu ft.; equivalent fluid pressure = 36#/cu ft.
 Vary D or warped wall uniformly from that at cut-off wall to that at headwall or endwall, for max "H" > 12'.
 Dimensions 2' "M", "H", "M", "N", Elev. a. Angle of flare, and Slope (as apply) are shown on the plans.

DRAWING NUMBER **D-44**

PIPE CULVERT-HEADWALLS, ENDWALLS & WARPED WINGWALLS

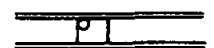
Revision	By	Approved	Date



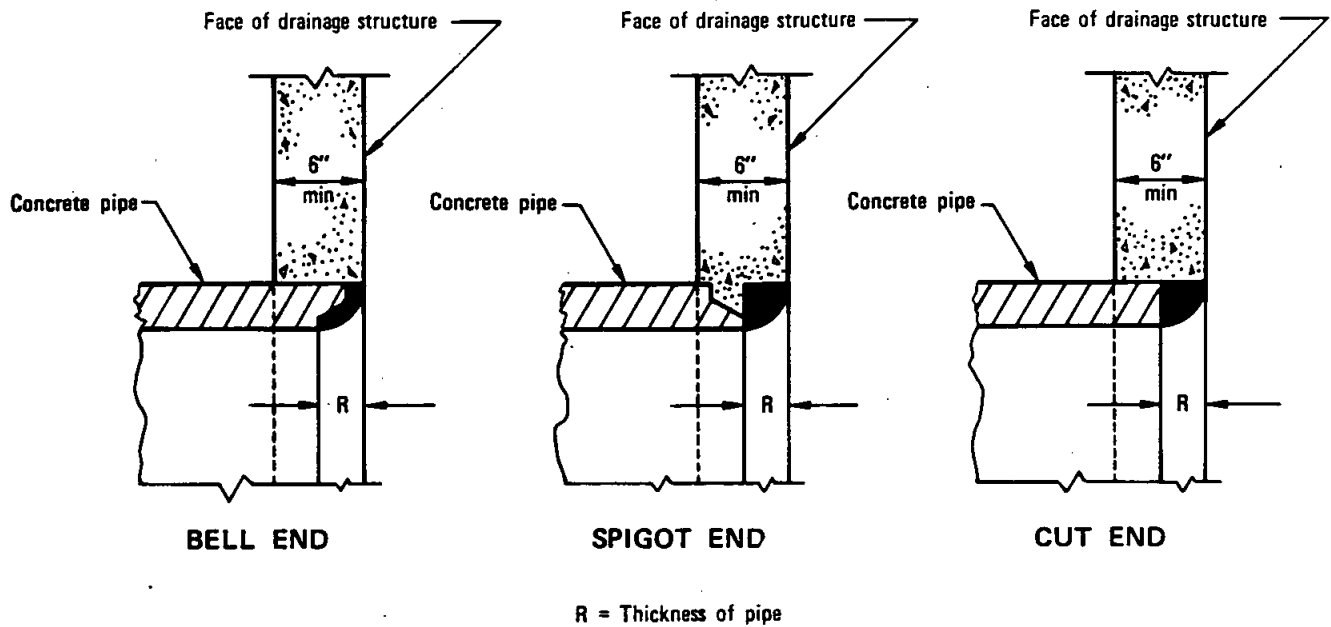
NOTES:

1. See Standard Drawings D-11 & D-12 for additional notes and details.
2. Dimension shown becomes 2'-0" when opening on both sides. Adjust manhole as required.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. When V exceeds 4' steps shall be installed. See Standard Drawing D-11 for details.
5. Concrete gutter to match adjacent gutters.
6. An expansion joint shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide 1/4" tooled groove in top slab in line with back of adjacent curb.
8. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.

LEGEND ON PLANS
4' Type J Inlet

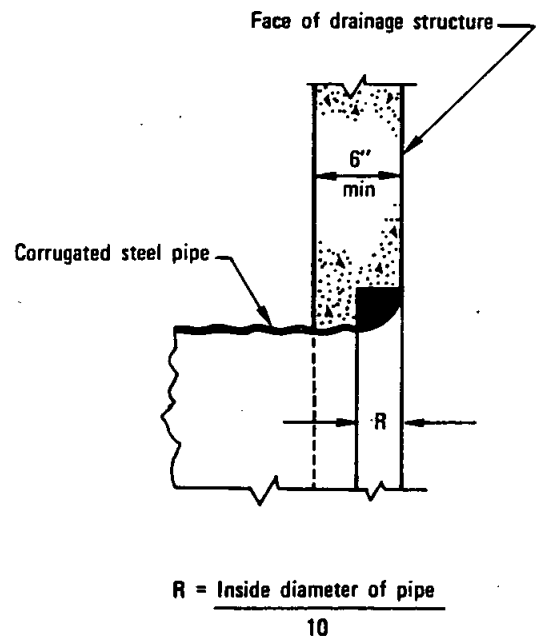


Revision	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Rebar	RL	M.B.	5-86	CURB INLET-TYPE J MEDIAN	Chairman P.C.E. C13768
					Date
				DRAWING NUMBER	D-45



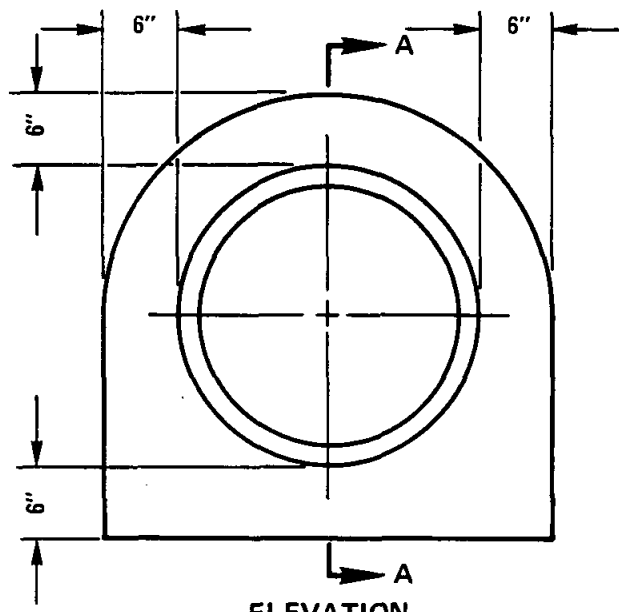
NOTE

The rounded areas may be built up of cement mortar or poured in place with the drainage structure.

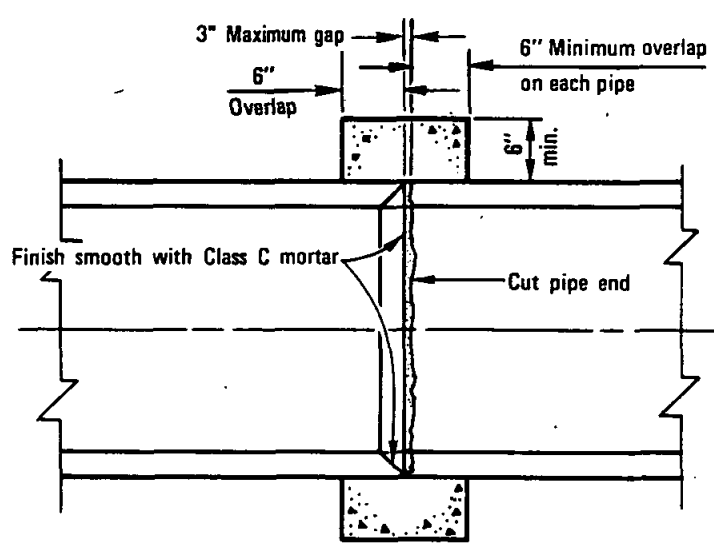


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Note	SC	D.S.	7-79			<i>Allen A. Kuehn</i>	<i>Dec. 1975</i>
				ROUNDED PIPE ENDS IN DRAINAGE STRUCTURES		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER	D-61

180
90
70



ELEVATION

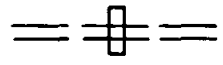


SECTION A-A

NOTES:

1. Pipe collar does not have to be finished if covered.
2. Concrete shall be 560-C-3250.
3. Where gap exceeds 3" but is not more than 6" an internal form shall be used.

LEGEND ON PLANS



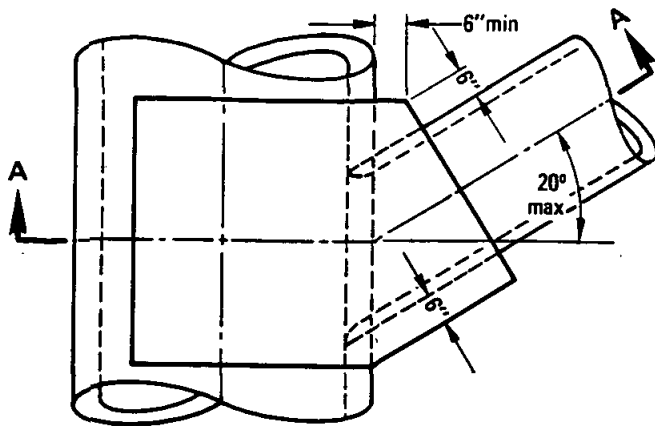
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allard A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

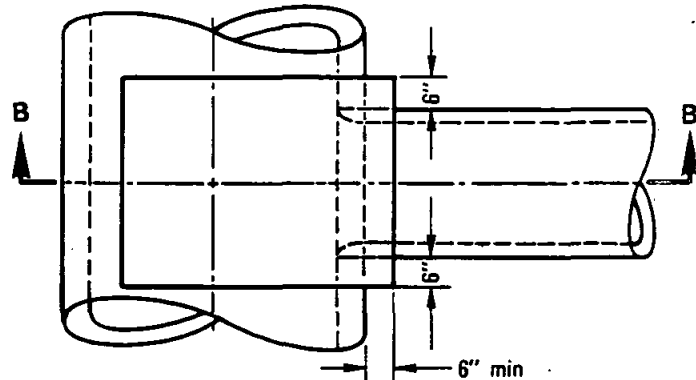
DRAWING
NUMBER **D-62**

PIPE COLLAR

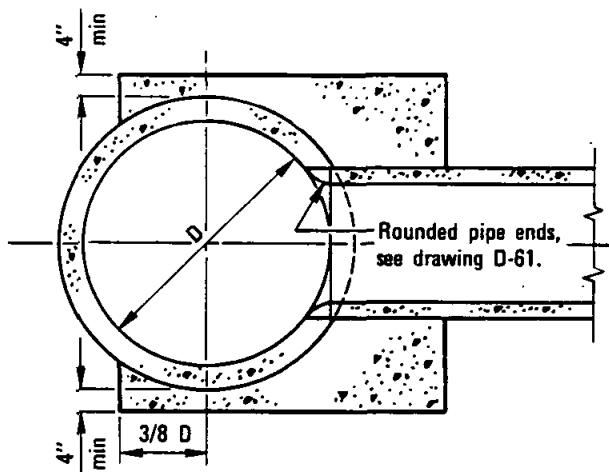
Revision	By	Approved	Date
Conc.	<i>SP</i>	<i>M.B.</i>	<i>5-86</i>
Overlap	<i>SP</i>	<i>A.H.</i>	<i>7-88</i>
Note 3	<i>SP</i>	<i>S.R.</i>	<i>5-92</i>



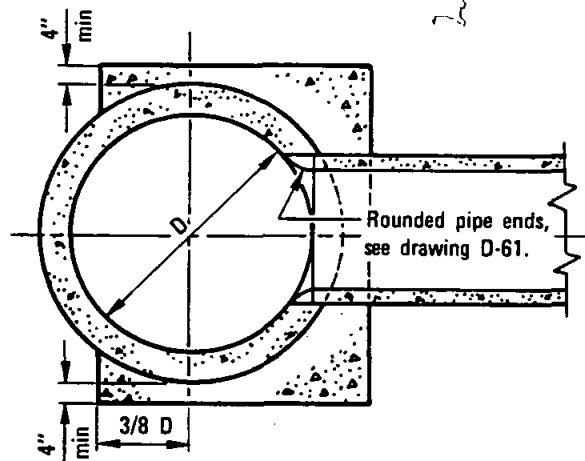
**PLAN
SKEWED CONNECTION**



PLAN



SECTION A-A



SECTION B-B

NOTES

1. The end of connecting pipe shall not project into the waterway of the larger pipe.
- ✓ 2. The larger pipe shall not be less than 24" I.D.
- ✓ 3. The smaller pipe shall not be more than 2/3 the size of the larger pipe.
4. Concrete shall be 470 - C - 2000.

LEGEND ON PLANS



Revision	By	Approved	Date

SAN DIEGO REGIONAL STANDARD DRAWING

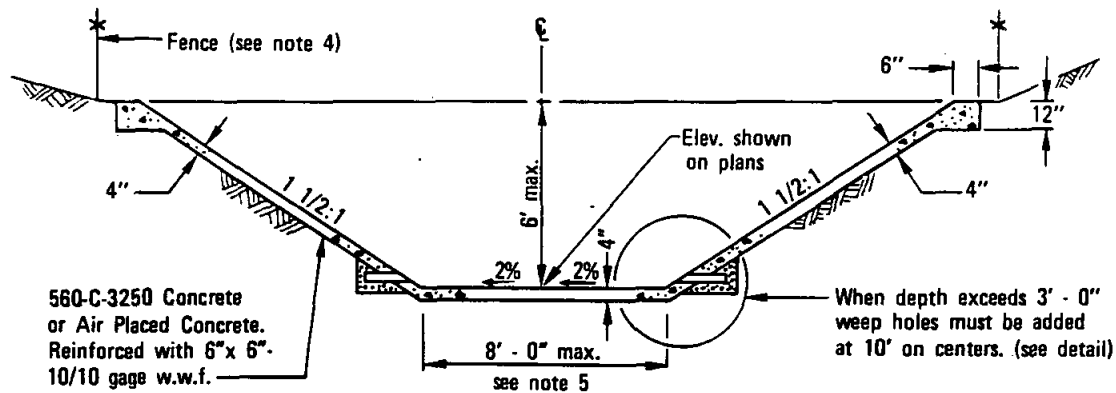
CONCRETE LUG

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

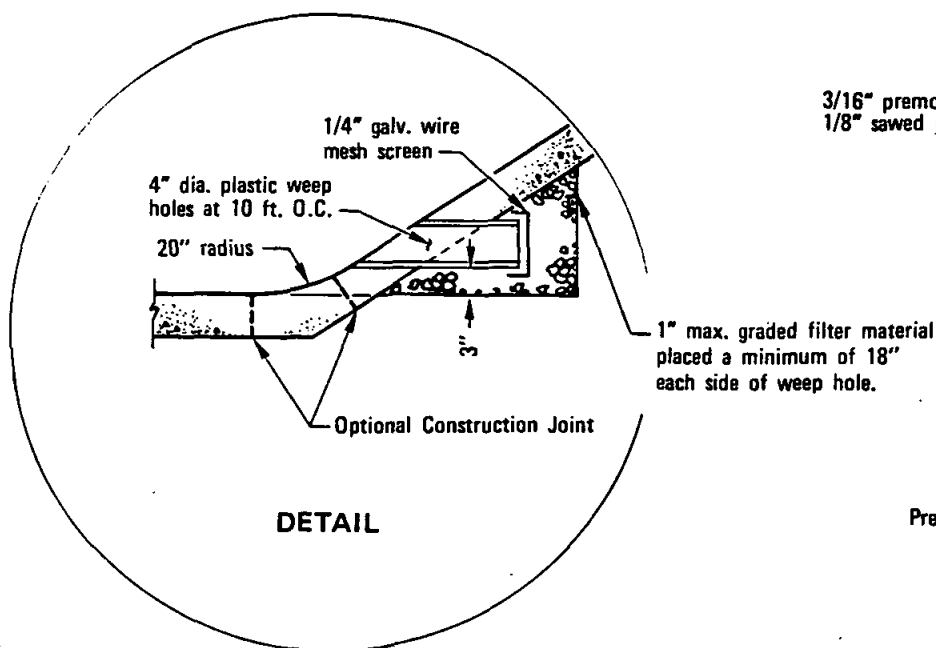
Allan A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER**

D-63

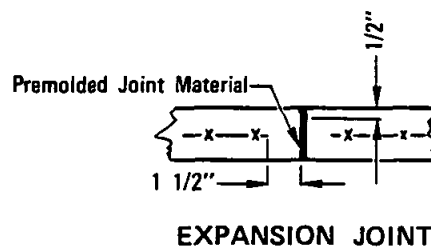
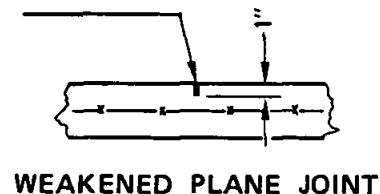


TYPICAL SECTION



DETAIL

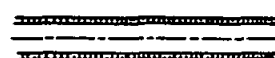
3/16" premolded joint material or 1/8" sawed joint.



NOTES

1. A.C. or clay pipe may be substituted for plastic pipe at weep holes.
2. Weakened plane joints shall be placed every 12' to 15'. Expansion joints shall be placed at all changes of section and at ends of curves.
3. Cutoff walls shall be constructed at each end of the channel along the full width of section. See Standard Drawing D-72.
4. Chainlink fence shall be as required by Agency.
5. For bottom widths greater than 8 feet see Standard Drawing D-71.
6. Reinforcement shown is minimum.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allan O. Kuehn Dec. 1975
Coordinator R.C.E. 13807 Date

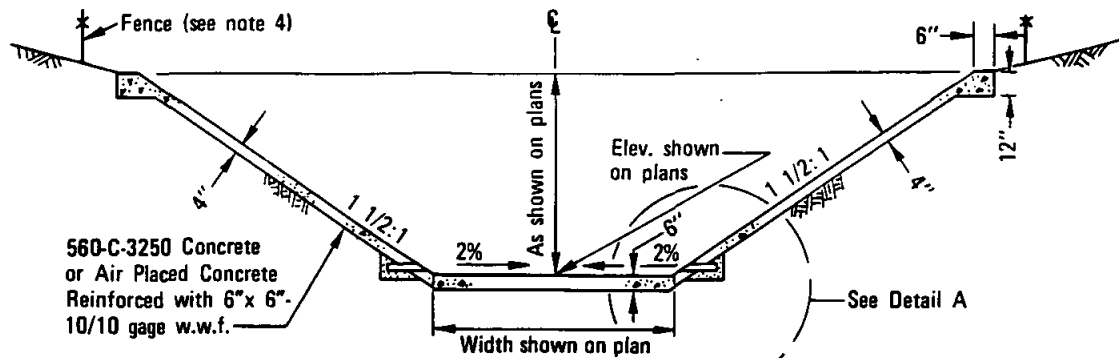
DRAWING NUMBER

D-70

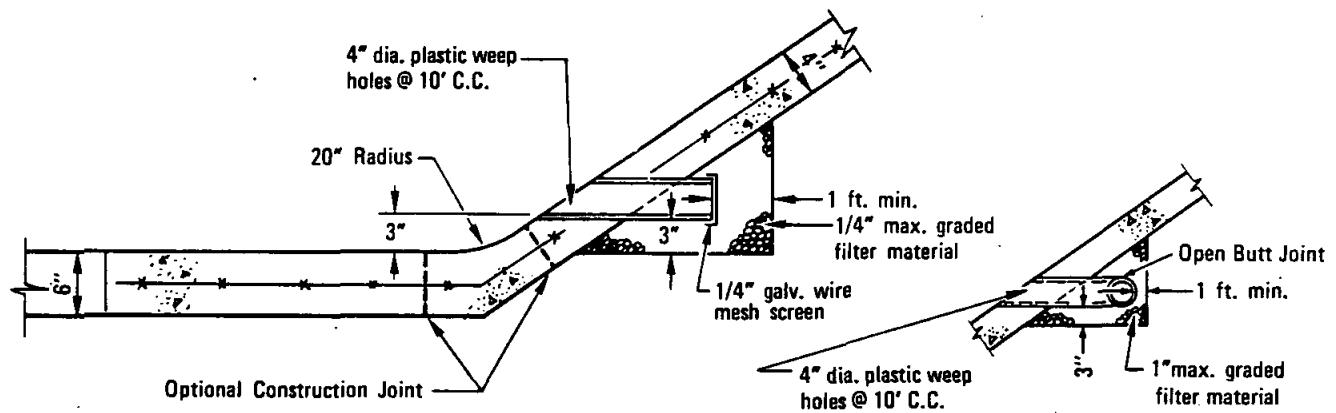
SAN DIEGO REGIONAL STANDARD DRAWING

MINOR DRAINAGE CHANNEL

Revision	By	Approved	Date
Conc.	<i>MB</i>	<i>M.B.</i>	5-86



TYPICAL SECTION

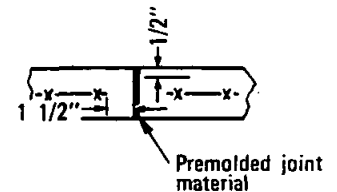


DETAIL A

ALT. CONTINUOUS DRAIN

3/16" premolded joint material or 1/8" sawed joint

WEAKENED PLANE JOINT

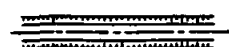


EXPANSION JOINT

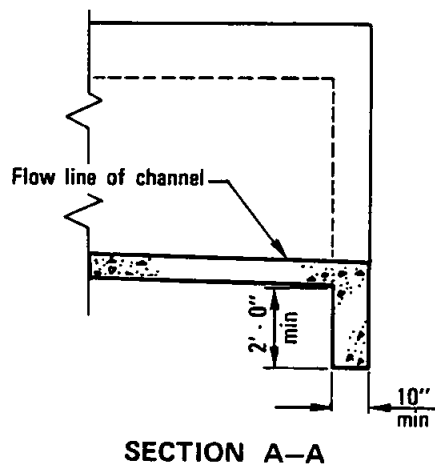
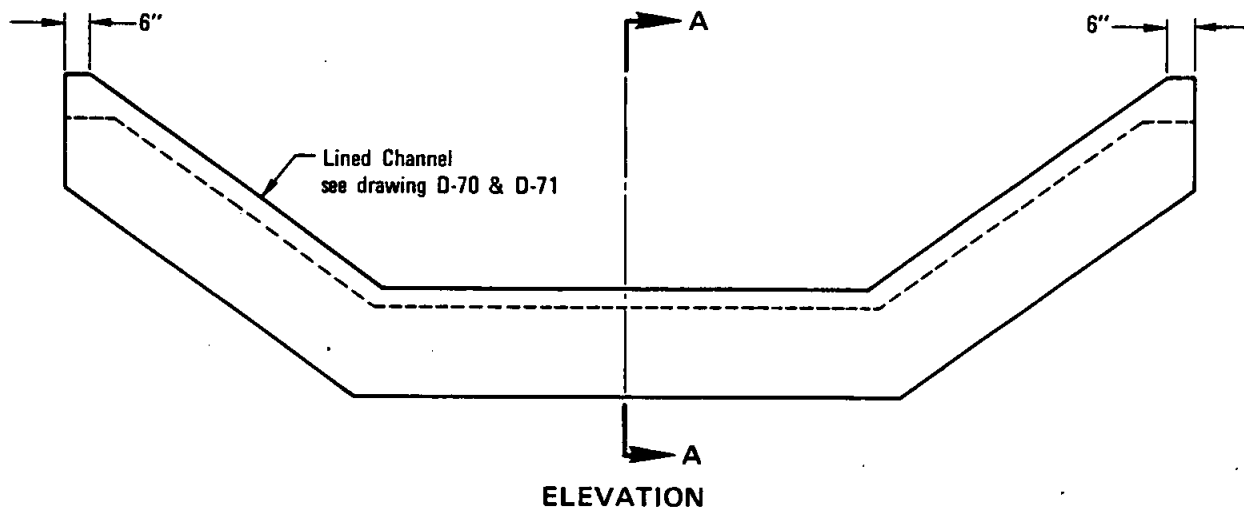
NOTES

1. A.C. or clay pipe may be substituted for plastic pipe at weep holes.
2. Weakened plane joints shall be placed every 12' to 15'. Expansion joints shall be placed at all changes of section and at ends of curves.
3. Cutoff walls shall be constructed at each end of the channel along the full width of section. See Standard Drawing D-72.
4. Chainlink fence shall be as required by Agency.
5. Reinforcement shown is minimum.

LEGEND ON PLANS



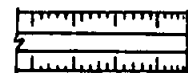
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Conc.	MC	M.B.	5-86		
				MAJOR DRAINAGE CHANNEL	<i>Alfred A. Kuehn</i> Dec. 1975 Coordinator R.C.E. 19807 Date
				DRAWING NUMBER	D-71



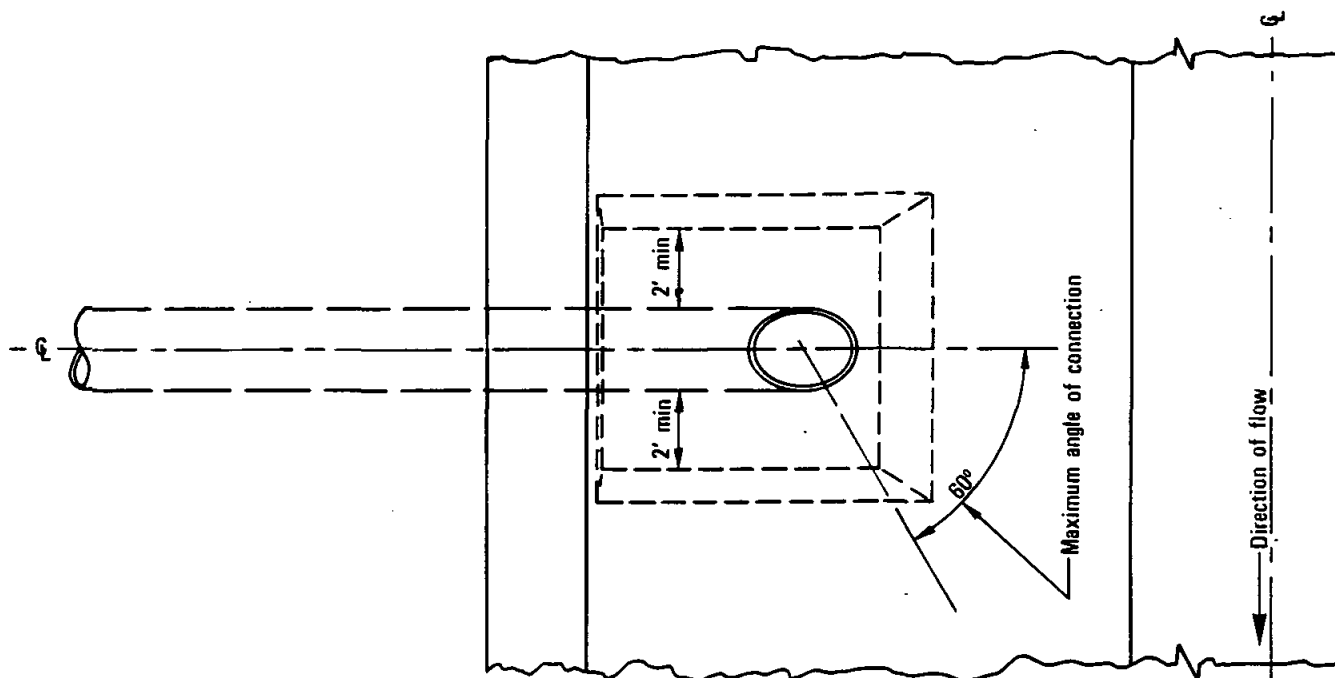
NOTES

1. Thickness and wall depth shall be as shown on plan.
2. Reinforcing in cutoff wall shall be the same as that required in channel.
3. Concrete shall be 560-C-3250

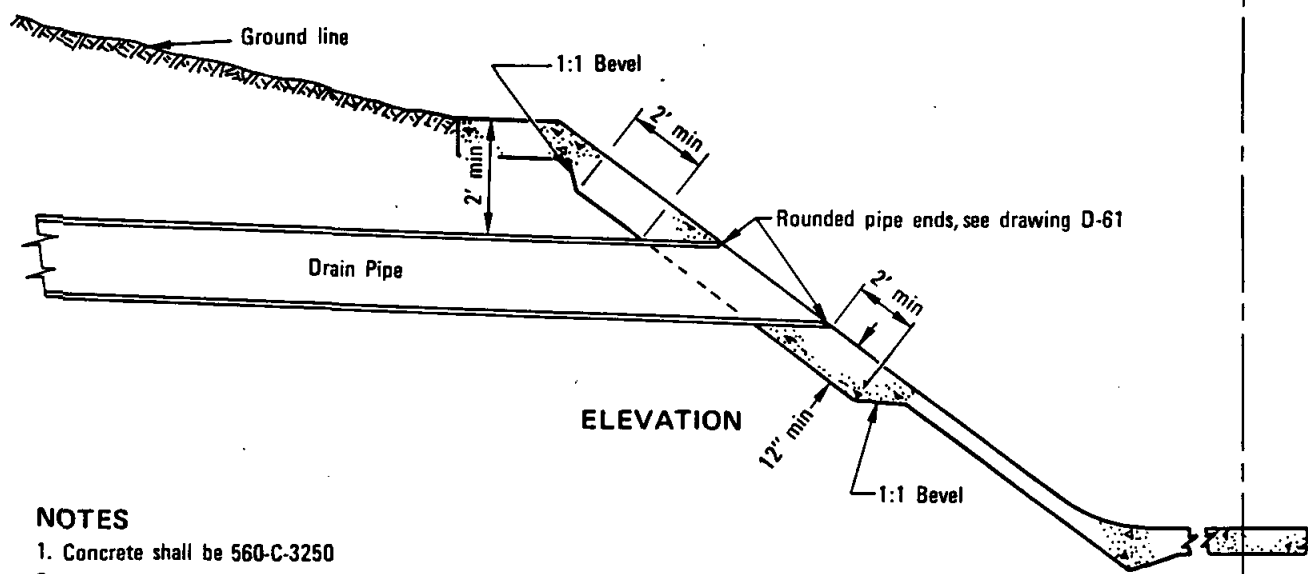
LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Allen O. Kershner</i> Dec. 1975 Coordinator R.C.C. 19807 Date	SAN DIEGO REGIONAL STANDARD DRAWING		Revision By Approved Date Conc. <i>RC</i> <i>M.B.</i> <i>5-86</i>
DRAWING NUMBER D-72	CUTOFF WALL FOR DRAINAGE CHANNEL		



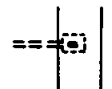
PLAN



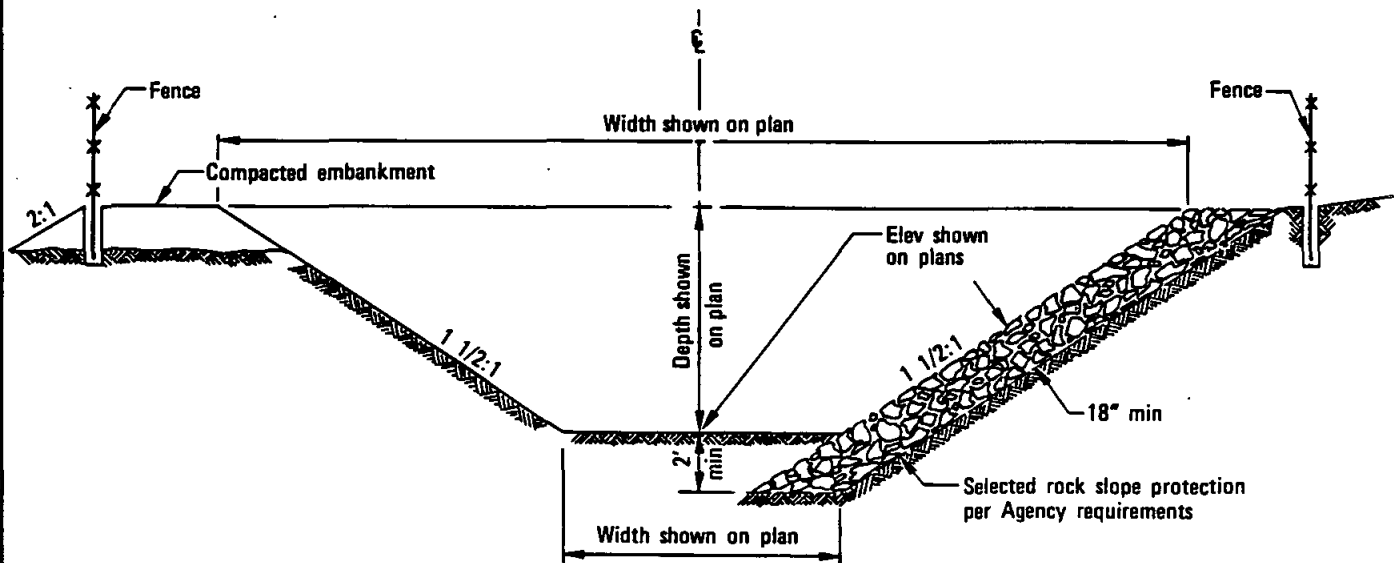
NOTES

1. Concrete shall be 560-C-3250
2. Pipe shall connect to channel as high as possible.
3. The maximum angle of connection is 60° downstream.
In no case shall a pipe angle upstream.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Conc.	SC	M.B.	5-86			<i>Allen G. Kershner</i>	<i>Dec. 1975</i>
				PIPE TO CHANNEL CONNECTION		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER	D-73



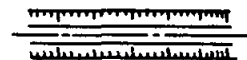
TYPICAL SECTION

NOTE

The following shall be as required by Agency:

- a) Low flow channel
- b) Filter blanket
- c) Cutoff wall
- d) Fence

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allan A. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

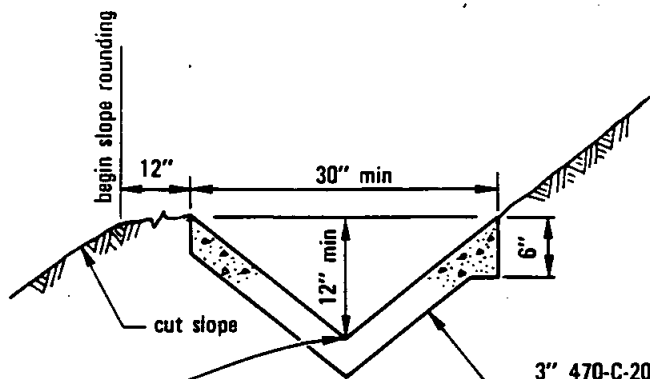
SAN DIEGO REGIONAL STANDARD DRAWING

GRADED EARTH CHANNEL

Revision	By	Approved	Date

DRAWING
NUMBER

D-74

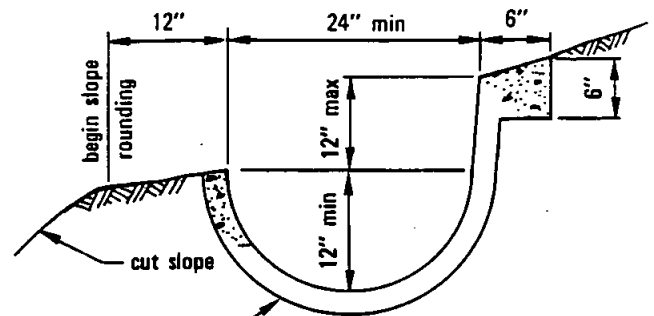


Brow Ditch bottom may be rounded at the option of the contractor.

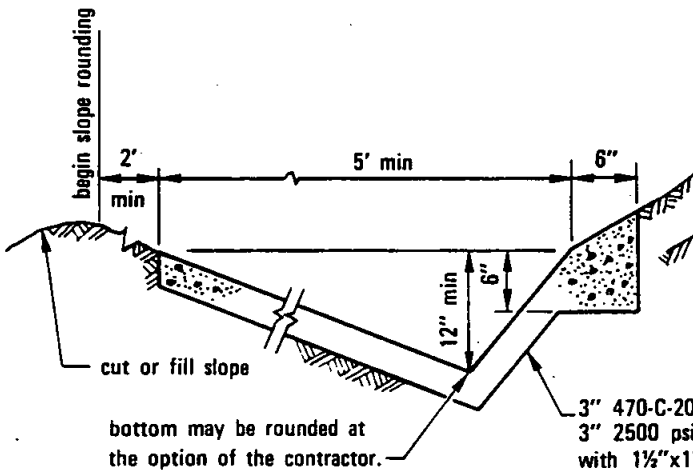
3" 470-C-2000 concrete or 3" 2500 psi, air placed concrete with 1½"x1½" 17 gage stucco netting.

TYPE A

BROW DITCH



TYPE B

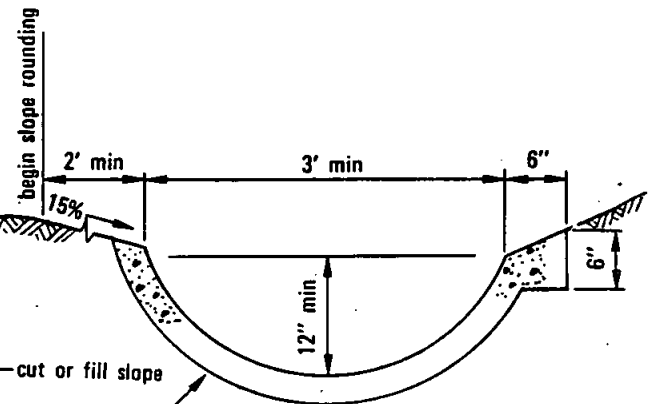


bottom may be rounded at the option of the contractor.

3" 470-C-2000 concrete or 3" 2500 psi, air placed concrete with 1½"x1½" 17 gage stucco netting.

TYPE C

TERRACE DITCH



TYPE D

NOTES

1. Longitudinal slope of lined ditch shall be 2% minimum.
2. Over slope down ditches shall employ 6" thickened edge section at both sides of ditch.

LEGEND ON PLANS



Revision	By	Approved	Date
Ditch type	RC	D.S.	7-79
A.P.C.	TR	M.B.	10-80
B height	RC	A.H.	7-80

SAN DIEGO REGIONAL STANDARD DRAWING

DRAINAGE DITCHES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen P. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **D-75**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Minda Kiehl *Dec. 1972*

Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

**SINGLE BOX CULVERT
DETAILS NO. 1**

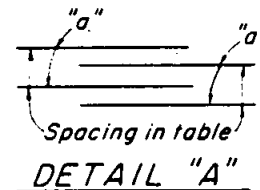
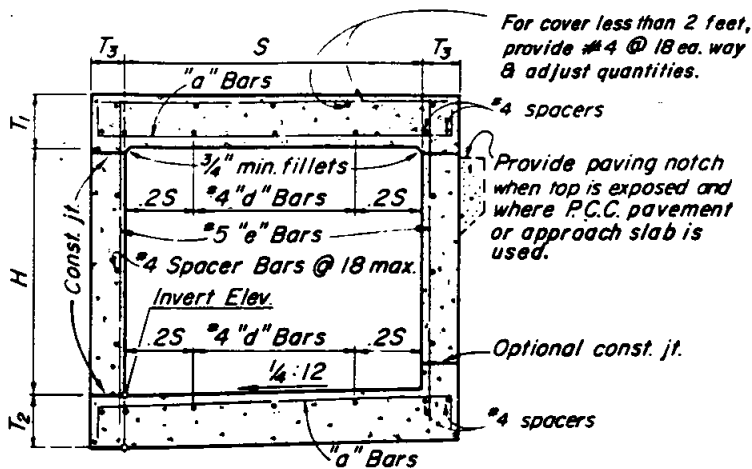
SPAN		2'			3'			4'			5'												6'																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
HEIGHT		2'		3'		2'		3'		4'		2'		3'		4'		5'		2'		3'		4'		5'		6'		7'																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
STRENGTH CLASSIFICATION		A		A		B		A		B		A		B		C		A		B		A		B		C		A		B		C		D		E		A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P		Q		R		S		T		U		V		W		X		Y		Z		AA		AB		AC		AD		AE		AF		AG		AH		AI		AJ		AK		AL		AM		AN		AO		AP		AQ		AR		AS		AT		AU		AV		AW		AX		AY		AZ		BA		BB		BC		BD		BE		BF		BG		BH		BI		BJ		BK		BL		BM		BN		BO		BP		BQ		BR		BS		BT		BU		BV		BW		BX		BY		BZ		CA		CB		CC		CD		CE		CF		CG		CH		CI		CJ		CK		CL		CM		CN		CO		CP		CQ		CR		CS		CT		CU		CV		CW		CX		CY		CZ		DA		DB		DC		DD		DE		DF		DG		DH		DI		DJ		DK		DL		DM		DN		DO		DP		DQ		DR		DS		DT		DU		DV		DW		DX		DY		DZ		EA		EB		EC		ED		EE		EF		EG		EH		EI		EJ		EK		EL		EM		EN		EO		EP		EQ		ER		ES		ET		EU		EV		EW		EX		EY		EZ		FA		FB		FC		FD		FE		FF		FG		FH		FI		FJ		FK		FL		FM		FN		FO		FP		FQ		FR		FS		FT		FU		FV		FW		FX		FY		FZ		GA		GB		GC		GD		GE		GF		GG		GH		GI		GJ		GK		GL		GM		GN		GO		GP		GQ		GR		GS		GT		GU		GV		GW		GX		GY		GZ		HA		HB		HC		HD		HE		HF		HG		HH		HI		HJ		HK		HL		HM		HN		HO		HP		HQ		HR		HS		HT		HU		HV		HW		HX		HY		HZ		IA		IB		IC		ID		IE		IF		IG		IH		II		IJ		IK		IL		IM		IN		IO		IP		IQ		IR		IS		IT		IU		IV		IW		IX		IY		IZ		JA		JB		JC		JD		JE		JF		JG		JH		JI		JJ		JK		JL		JM		JN		JO		JP		JQ		JR		JS		JT		JU		JV		JW		JX		JY		JZ		KA		KB		KC		KD		KE		KF		KG		KH		KI		KJ		KL		KM		KN		KO		KP		KQ		KR		KS		KT		KU		KV		KW		KX		KY		KZ		LA		LB		LC		LD		LE		LF		LG		LH		LI		LJ		LK		LM		LN		LO		LP		LQ		LR		LS		LT		LU		LV		LW		LX		LY		LZ		MA		MB		MC		MD		ME		MF		MG		MH		MI		MJ		MK		ML		MN		MO		MP		MQ		MR		MS		MT		MU		MV		MW		MX		MY		MZ		NA		NB		NC		ND		NE		NF		NG		NH		NI		NJ		NK		NL		NM		NN		NO		NP		NQ		NR		NS		NT		NU		NV		NW		NX		NY		NZ		OA		OB		OC		OD		OE		OF		OG		OH		OI		OJ		OK		OL		OM		ON		OO		OP		OQ		OR		OS		OT		OU		OV		OW		OX		OY		OZ		PA		PB		PC		PD		PE		PF		PG		PH		PI		PJ		PK		PL		PM		PN		PO		PP		PQ		PR		PS		PT		PU		PV		PW		PX		PY		PZ		QA		QB		QC		QD		QE		QF		QG		QH		QI		QJ		QK		QL		QM		QN		QO		QP		QQ		QR		QS		QT		QU		QV		QW		QX		QY		QZ		RA		RB		RC		RD		RE		RF		RG		RH		RI		RJ		RK		RL		RM		RN		RO		RP		RQ		RR		RS		RT		RU		RV		RW		RX		RY		RZ		SA		SB		SC		SD		SE		SF		SG		SH		SI		SJ		SK		SL		SM		SN		SO		SP		SQ		SR		SS		ST		SU		SV		SW		SX		SY		SZ		TA		TB		TC		TD		TE		TF		TG		TH		TI		TJ		TK		TL		TM		TN		TO		TP		TQ		TR		TS		TU		TV		TW		TX		TY		TZ		UA		UB		UC		UD		UE		UF		UG		UH		UI		UJ		UK		UL		UM		UN		UO		UP		UQ		UR		US		UT		UU		UV		UW		UX		UY		UZ		VA		VB		VC		VD		VE		VF		VG		VH		VI		VJ		VK		VL		VM		VN		VO		VP		VQ		VR		VS		VT		VU		VV		VW		VX		VY		VZ		WA		WB		WC		WD		WE		WF		WG		WH		WI		WJ		WK		WL		WM		WN		WO		WP		WQ		WR		WS		WT		WU		WV		WW		WX		WY		WZ		XA		XB		XC		XD		XE		XF		XG		XH		XI		XJ		XK		XL		XM		XN		XO		XP		XQ		XR		XS		XT		XU		XV		XW		XX		XY		XZ		YA		YB		YC		YD		YE		YF		YG		YH		YI		YJ		YK		YL		YM		YN		YO		YP		YQ		YR		YS		YT		YU		YV		YW		YX		YY		YZ		ZA		ZB		ZC		ZD		ZE		ZF		ZG		ZH		ZI		ZJ		ZK		ZL		ZM		ZN		ZO		ZP		ZQ		ZR		ZS		ZT		ZU		ZV		ZW		ZX		ZY		ZZ	
MAX FILL OVER TOP		66		38		38		66		28		28		37		29		37		50		12		27		12		27		11		26		35		46		11		29		35		46		10		18		10		18		10		18		25		9		18		29		36		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36		43		9		17		25		36																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

[illegible]

		SPAN				12'																							
		HEIGHT				6'				7'				8'				9'				10'				12'			
STRENGTH CLASSIFICATION		A	B	A	B	A	B	A	B	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C					
MAX. FILL OVER TOP		5	16	5	16	5	16	5	16	5	16	24	5	16	24	5	16	24	5	16	24	5	16	24					
Conc	Top Slab	T ₁	8/4	11/4	8/4	11/4	8/4	11/4	9	11/4	3/4	9	11/4	13/4	9	11/4	13/4	9	11/4	13/4	9	11/4	13/4	9					
	Bottom Slab	T ₂	6/4	12/4	6/4	12/4	6/4	12/4	4/4	9	12/4	4/4	9	12/4	4/4	9	12/4	4/4	9	12/4	4/4	9	12/4	4/4					
	Sidewalls	T ₃	7/4	10/4	7/4	10/4	7/4	10/4	6	10/4	2/4	9	10/4	2/4	9	10/4	2/4	9	10/4	2/4	9	10/4	2/4	9					
Reinforcing Steel	"a"	Size: Bar #	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7					
		Spacing	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8	11	10	8	11	10	8	11					
		Length	11-3	11-6	11-3	11-6	11-3	11-6	11-3	11-6	11-8	11-3	11-6	11-8	11-3	11-6	11-8	11-3	11-6	11-8	11-3	11-6	11-8	11-3					
	"b"	Size: Bar #	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7					
		Spacing	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8	11	10	8	11	10	8	11					
		Dimension "X"	2-8	3-0	2-8	3-0	2-8	3-0	2-8	3-0	3-0	2-8	3-0	3-0	2-8	3-0	3-0	2-8	3-0	3-0	2-8	3-0	3-0	2-8					
	"c"	Length	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	5-7	4-10	5-7	5-7	4-10	5-7	5-7	4-10	5-7	5-7	4-10	5-7					
		Size: Bar #	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7					
		Spacing	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8	11	10	8	11	10	8	11					
	"d"	Dimension "Y"	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9					
		Length	10-2	10-4	11-2	11-4	12-2	12-4	13-2	13-4	13-6	14-4	14-6	16-2	16-4	16-6	18-2	18-4	18-6	20-2	20-4	20-6	22-2	22-4					
		Size: Bar #	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7					
"e"	Spacing	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8	11	10	8	11	10	8	11						
	Dimension "Y"	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9						
	Length	5-11	6-3	5-11	6-3	5-11	6-3	5-11	6-3	6-8	5-11	6-3	6-8	5-11	6-3	6-8	5-11	6-3	6-8	5-11	6-3	6-8	5-11						
Bars	Top Slab- No of	10	6	10	6	10	6	10	6	6	10	6	10	6	10	6	10	6	10	6	10	6	10						
	Bottom Slab- No of	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6						
	Spacing	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18						
Doors	Spacers	Total Number	36	44	36	44	36	44	36	44	36	44	36	44	36	44	36	44	36	44	36	44	36						
	Concrete: CY per lin. ft	29.13	29.3	103	144	108	132	118	158	190	30	163	198	141	178	213	213	213	213	213	213	213	213						
	Reinf: lbs per lin ft	205	239	213	304	218	311	223	317	367	231	326	397	243	341	415	415	415	415	415	415	415	415						

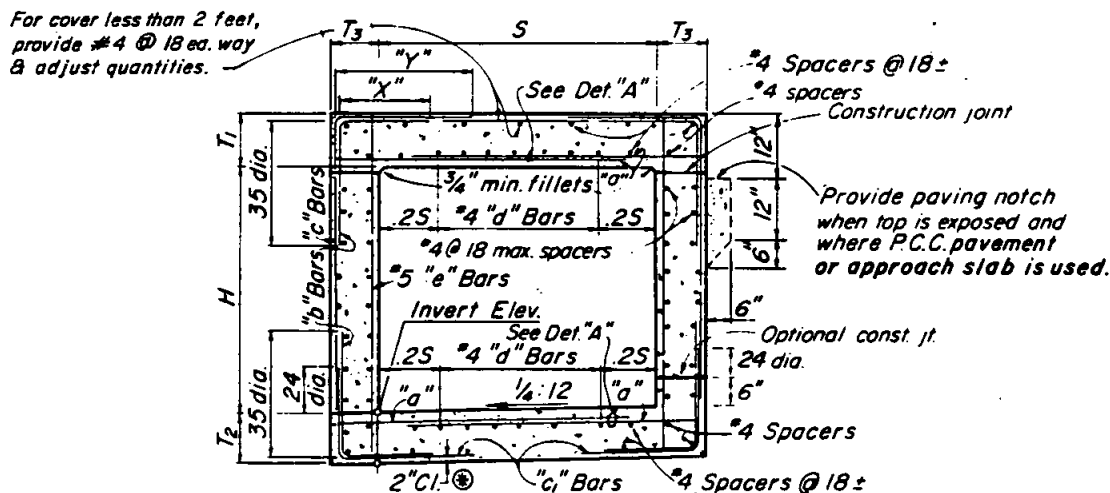
For boxes of height less than that shown in table, use next greater table height slabs, wall dimensions and reinforcing steel, and make necessary changes in bar lengths, number of spacers and quantities.

Revision	By	Approved	Date
Enlarged	JA	JA	8-83

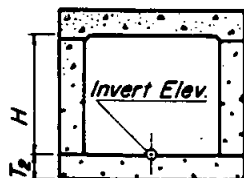


⊕ For reinforcement clearance, except at bottom, see "Miscellaneous Details."

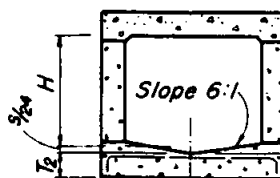
TYPICAL SECTIONS 2' THRU 6' SPANS



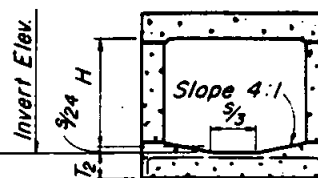
TYPICAL SECTION 7' THRU 12' SPANS



FLAT INVERT



V INVERT



TRAPEZOIDAL INVERT

ALTERNATIVE INVERTS

(When shown)

Revision	By	Approved	Date
Enlarged	32	AK	8-88

SAN DIEGO REGIONAL STANDARD DRAWING

**SINGLE BOX CULVERT
DETAILS NO. 2**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER D-76B**

SPAN		4'				5'				6'			
HEIGHT		2'				3'				4'			
STRENGTH CLASSIFICATION		A	B	C	D	A	B	C	D	A	B	C	D
MAX. FILL OVER TOP		11	21	32	43	11	23	34	46	11	23	34	46
Conc.	Top Slab	T ₁	6 1/2	6 1/2	7 1/2	7 1/2	8 1/2	8 1/2	9 1/2	9 1/2	10 1/2	10 1/2	11 1/2
	Bottom Slab	T ₂	6 1/2	7 1/2	8 1/2	8 1/2	9 1/2	10 1/2	11 1/2	11 1/2	12 1/2	13 1/2	14 1/2
	Sidewalls	T ₃	6	6	6	6	6	6	6	6	6	6	6
Reinforcing Steel	a	Size: Bar	5	4	4	4	4	4	4	4	4	4	4
		Spacing	11	11	9	11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
		Length	10-3	10-2	10-2	10-3	10-2	10-2	10-3	10-2	10-2	10-3	10-2
	b or c	Size: Bar	5	5	5	5	5	5	5	5	5	5	5
		Spacing	11	11	9	11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
		Length	9-4	9-4	9-6	9-4	9-4	9-6	9-7	9-4	9-4	9-6	9-7
	c	Size: Bar	4	5	5	5	5	5	5	5	5	5	5
		Spacing	11	11	9	11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
		Length	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
	d Dist	Top Slab-Tot. No.	10	6	6	10	6	6	6	10	6	6	6
		Bottom Slab-Tot. No.	6	6	6	6	6	6	6	6	6	6	6
		Size: Bar	4	4	4	4	4	4	4	4	4	4	4
Quant	Concrete: C.Y. per lin. ft.		0.47	0.51	0.57	0.53	0.57	0.63	0.69	0.75	0.81	0.87	0.94
	Reinf.: Lbs. per lin. ft.		81	74	84	84	79	91	101	87	85	99	111

SPAN		6'				8'				10'			
HEIGHT		5'				6'				7'			
STRENGTH CLASSIFICATION		A	B	C	D	A	B	C	D	A	B	C	D
MAX. FILL OVER TOP		4	19	33	43	4	19	33	43	3	14	25	37
Conc.	Top Slab	T ₁	7 1/4	8 1/4	10 1/4	12	8 1/4	9 1/4	12	8 1/4	9 1/4	12	14
	Bottom Slab	T ₂	7 1/4	9 1/4	11 1/4	12	7 1/4	9 1/4	12	7 1/4	9 1/4	12	14
	Sidewalls	T ₃	6	6	6	6	6	6	6	6	6	6	6
Reinforcing Steel	a	Size: Bar	5	4	4	4	4	4	4	4	4	4	4
		Spacing	9 1/2	11	8 1/2	10 1/2	9 1/2	11	8 1/2	10 1/2	9 1/2	11	8 1/2
		Length	14-3	14-2	14-2	14-3	14-2	14-2	14-3	14-2	14-2	14-3	14-2
	b or c	Size: Bar	5	5	5	5	5	5	5	5	5	5	5
		Spacing	9 1/2	11	8 1/2	10 1/2	9 1/2	11	8 1/2	10 1/2	9 1/2	11	8 1/2
		Length	13-6	13-3	13-3	13-6	13-3	13-3	13-6	13-3	13-3	13-6	13-3
	c	Size: Bar	4	5	5	5	5	5	5	5	5	5	5
		Spacing	9 1/2	11	8 1/2	10 1/2	9 1/2	11	8 1/2	10 1/2	9 1/2	11	8 1/2
		Length	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6
	d Dist	Top Slab-Tot. No.	12	6	6	6	12	6	6	6	12	6	6
		Bottom Slab-Tot. No.	6	6	6	6	6	6	6	6	6	6	6
		Size: Bar	4	4	4	4	4	4	4	4	4	4	4
Quant	Concrete: C.Y. per lin. ft.		0.88	1.01	1.19	1.30	0.93	1.07	1.25	1.47	1.08	1.30	1.55
	Reinf.: Lbs. per lin. ft.		128	131	164	175	129	137	177	201	169	175	200

SPAN		10'				12'				12'			
HEIGHT		7'				8'				9'			
STRENGTH CLASSIFICATION		A	B	C	D	A	B	C	D	A	B	C	D
MAX. FILL OVER TOP		2	17	30	43	2	17	30	43	2	17	30	43
Conc.	Top Slab	T ₁	8 1/2	12 1/2	15	8 1/2	12 1/2	15	17 1/2	10	14 1/2	17 1/2	20 1/2
	Bottom Slab	T ₂	8 1/2	13 1/2	16 1/2	8 1/2	13 1/2	16 1/2	18 1/2	9 1/2	13 1/2	16 1/2	19 1/2
	Sidewalls	T ₃	6	6 1/2	7	6	6 1/2	7	7 1/2	6	6 1/2	7	7 1/2
Reinforcing Steel	a	Size: Bar	6	4	4	4	4	4	4	4	4	4	4
		Spacing	11	9 1/2	10	11	10	10	9	11 1/2	9	11 1/2	9
		Length	22-4	22-2	22-2	22-4	22-2	22-2	22-4	22-2	22-2	22-4	22-2
	b or c	Size: Bar	6	7	8	6	7	8	6	7	8	6	7
		Spacing	11	9 1/2	10	11	10	10	9	11 1/2	9	11 1/2	9
		Length	21-7	21-4	22-3	21-4	22-2	22-2	21-7	21-4	22-3	21-4	22-2
	c	Size: Bar	6	7	8	6	7	8	6	7	8	6	7
		Spacing	11	9 1/2	10	11	10	10	9	11 1/2	9	11 1/2	9
		Length	10-6	10-7	10-7	10-6	10-6	10-6	10-6	10-6	10-6	10-6	10-6
	d Dist	Top Slab-Tot. No.	18	10	10	18	10	10	10	18	10	10	10
		Bottom Slab-Tot. No.	10	10	10	10	10	10	10	10	10	10	10
		Size: Bar	4	4	4	4	4	4	4	4	4	4	4
Quant	Concrete: C.Y. per lin. ft.		1.51	2.18	2.64	1.68	2.27	2.74	3.04	1.92	2.51	3.03	3.41
	Reinf.: Lbs. per lin. ft.		243	280	339	252	278	335	430	279	327	400	476

Note:

For boxes of height less than that shown in table, use next greater table height slabs, wall dimensions and reinforcing steel and make necessary changes in bar lengths, number of spacers and quantities. Number of "d" bars in table is slab total for both cells.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen J. Keshner Dec. 1975
Coordinator R.C.E. 19807 Date

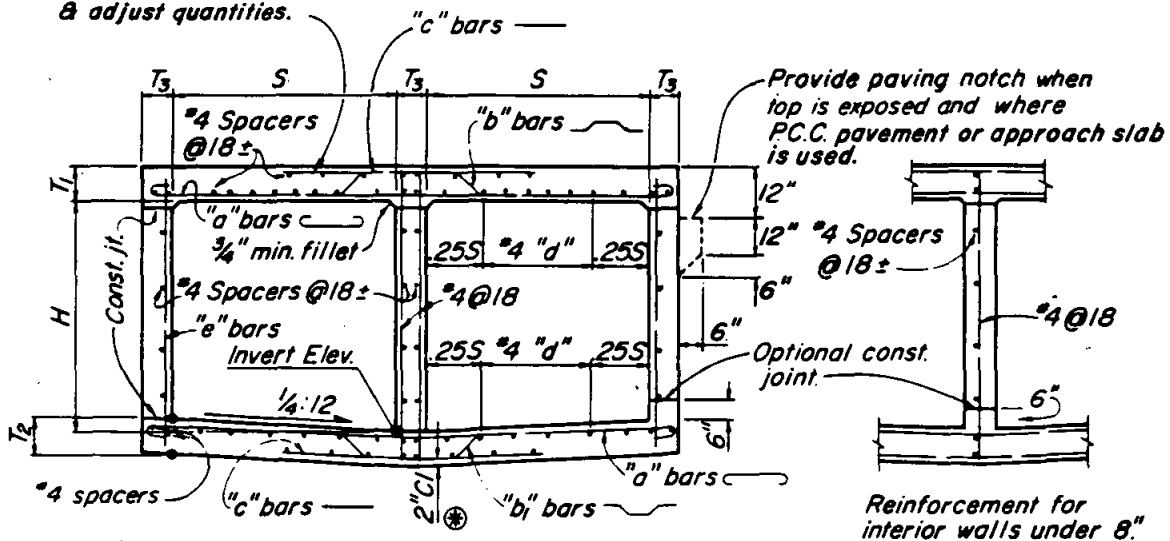
DRAWING NUMBER **D-77A**

SAN DIEGO REGIONAL STANDARD DRAWING

**DOUBLE BOX CULVERT
DETAILS NO. 1**

Revision	By	Approved	Date
Enlarge	JK	O.K.	9-88

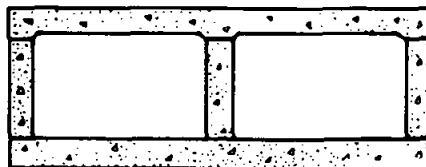
For cover less than 2 feet,
provide #4 @ 18 ea. way.
& adjust quantities.



TYPICAL SECTION

(Showing reinforcement for interior walls 8" and over.)

⊗ For reinforcement clearance, except
at bottom, see "Miscellaneous Details."



"FLAT INVERT" ALTERNATIVE

(When shown)

Revision	By	Approved	Date
Enlarge	SC	Q.H	9/88

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen G. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-77B**

[illegible]

Note:

For boxes of height less than that shown in table, use next greater table height slabs, wall dimensions and reinforcing steel and make necessary changes in bar lengths, number of spacers and quantities. Number of "d" bars in table is slab total for all three calls.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan D. Kerschbaum *Dec. 1975*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT DETAILS NO. 1

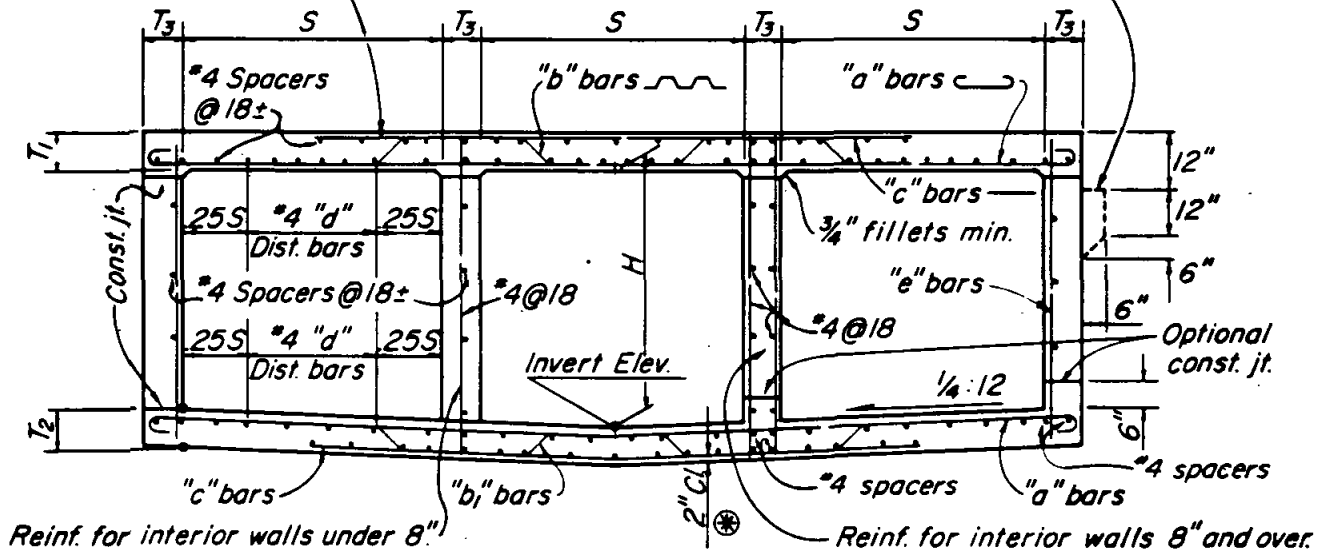
Revision	By	Approved	Date
Enlarge	✶	JH	9-88

Enlarge	52	14	9-88
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DRAWING NUMBER **D-78A**

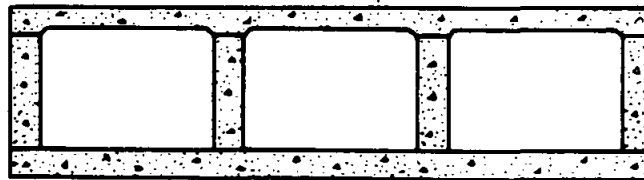
For cover less than 2 feet, extend "c" bars full length, top slab only. Provide additional #4 spacers @ 18± and adjust quantities.

Provide paving notch when top is exposed and where P.C.C. pavement or approach slab is used.



TYPICAL SECTION

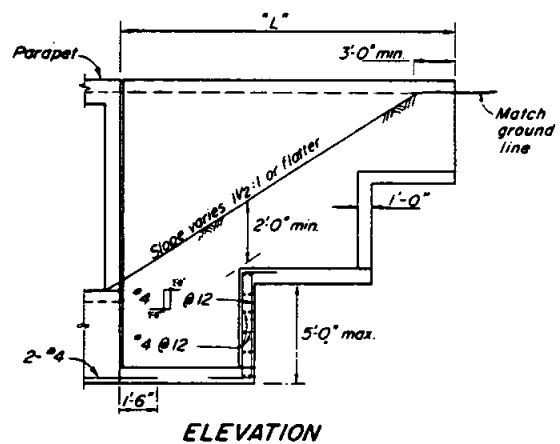
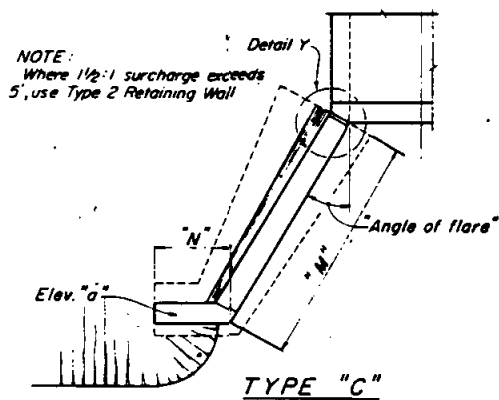
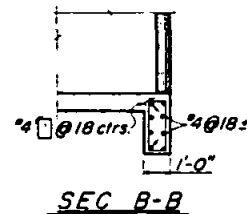
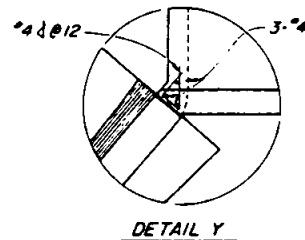
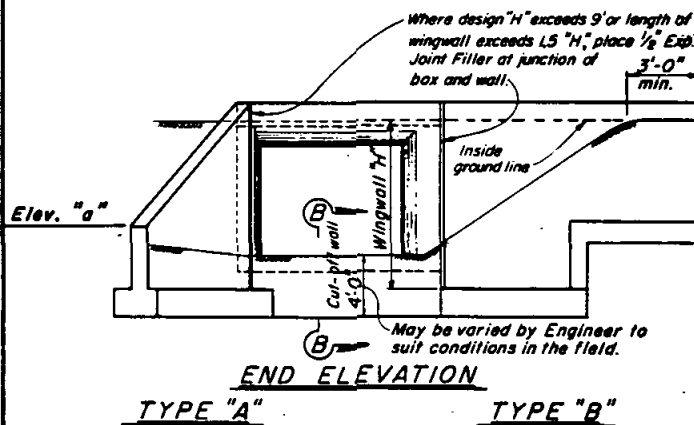
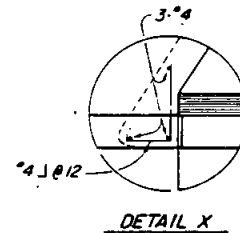
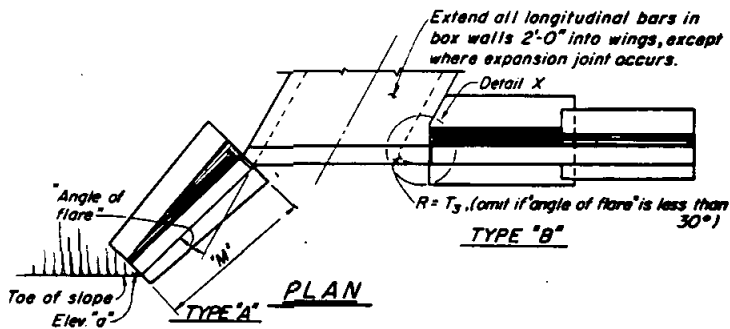
⊗ For reinforcement clearance, except at bottom, see "Miscellaneous Details."



"FLAT INVERT" ALTERNATIVE

(When shown)

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Enlarge	Sc	U.H.	9-88			<i>Allen A. Kershner</i>	<i>Dec. 1975</i>
				TRIPLE BOX CULVERT DETAILS NO. 2		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER D-78B	



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan Q. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-79A**

SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 1

Revision	By	Approved	Date
Enlarge	<i>Q.H.</i>	<i>Q.H.</i>	7-88

TYPICAL SECTION
H=4' THRU 12'

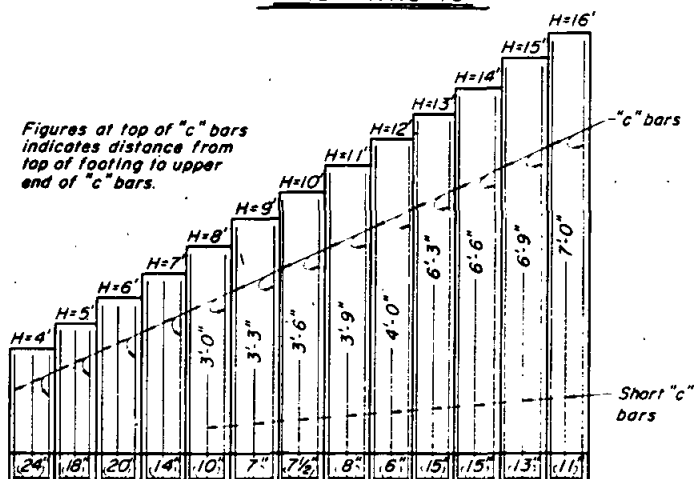
TYPICAL SECTION
H=13' THRU '16'

Design Notes:

Unit Stresses: $f_s = 20,000 \text{ p.s.i.}$, $f_c = 1200 \text{ p.s.i.}$, $n = 10$

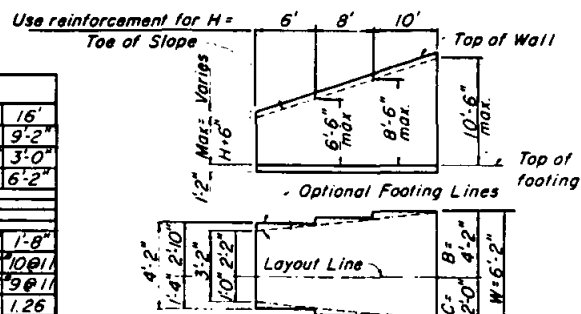
Maximum Toe Pressure = $1\frac{1}{2}$ Tons/sq. ft.

Elevations, length and angle of flare of wings may be varied by the Engineer to suit conditions encountered in the field. Walls designed for 2' liveload surcharge, 1½" sloping surcharge not to exceed 5' in elevation plus 2' liveload surcharge, or unlimited 2:1 surcharge. Dimensions "H", "L", "M", "N", Elev "a" and "Angle of flare" (as apply) are shown on the plans.



REINFORCED CONCRETE WINGWALLS													
"H"	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
W	3'-2"	3'-8"	4'-2"	4'-8"	5'-2"	5'-8"	6'-2"	6'-8"	7'-2"	7'-8"	8'-2"	8'-8"	9'-2"
C	1'-0"	1'-2"	1'-4"	1'-6"	1'-8"	1'-10"	2'-0"	2'-2"	2'-4"	2'-6"	2'-8"	2'-10"	3'-0"
B	2'-2"	2'-6"	2'-10"	3'-2"	3'-6"	3'-10"	4'-2"	4'-6"	4'-10"	5'-2"	5'-6"	5'-10"	6'-2"
F													
Batter	None										1/2:12		
S	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6 1/2"	1'-7"	1'-7 1/2"	1'-8"
"c" Bars	#4@24	#4@18	#4@20	#4@14	#4@10	#4@7	#4@7 1/2	#4@8	#4@6	#4@15	#4@15	#4@13	#4@11
"d" Bars	#4@24	#4@18	#4@20	#4@14	#4@10	#4@14	#4@15	#4@16	#4@12	#4@15	#4@15	#4@13	#4@11
Conc. %L	0.32	0.38	0.44	0.49	0.55	0.61	0.67	0.73	0.79	1.02	1.10	1.18	1.26
Reinf. %L	13	16	19	25	30	37	49	62	76	73	90	104	125

Quantities do not include that portion above the design "H" limit.



TYPICAL LAYOUT EXAMPLE

Revision	By	Approved	Date
Enlarge	<i>EH</i>	<i>A.H.</i>	<i>9-88</i>

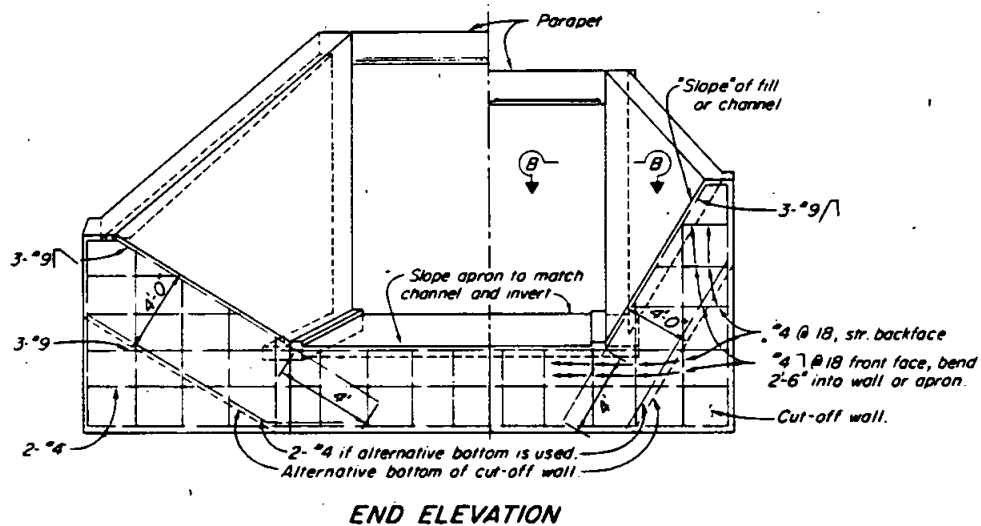
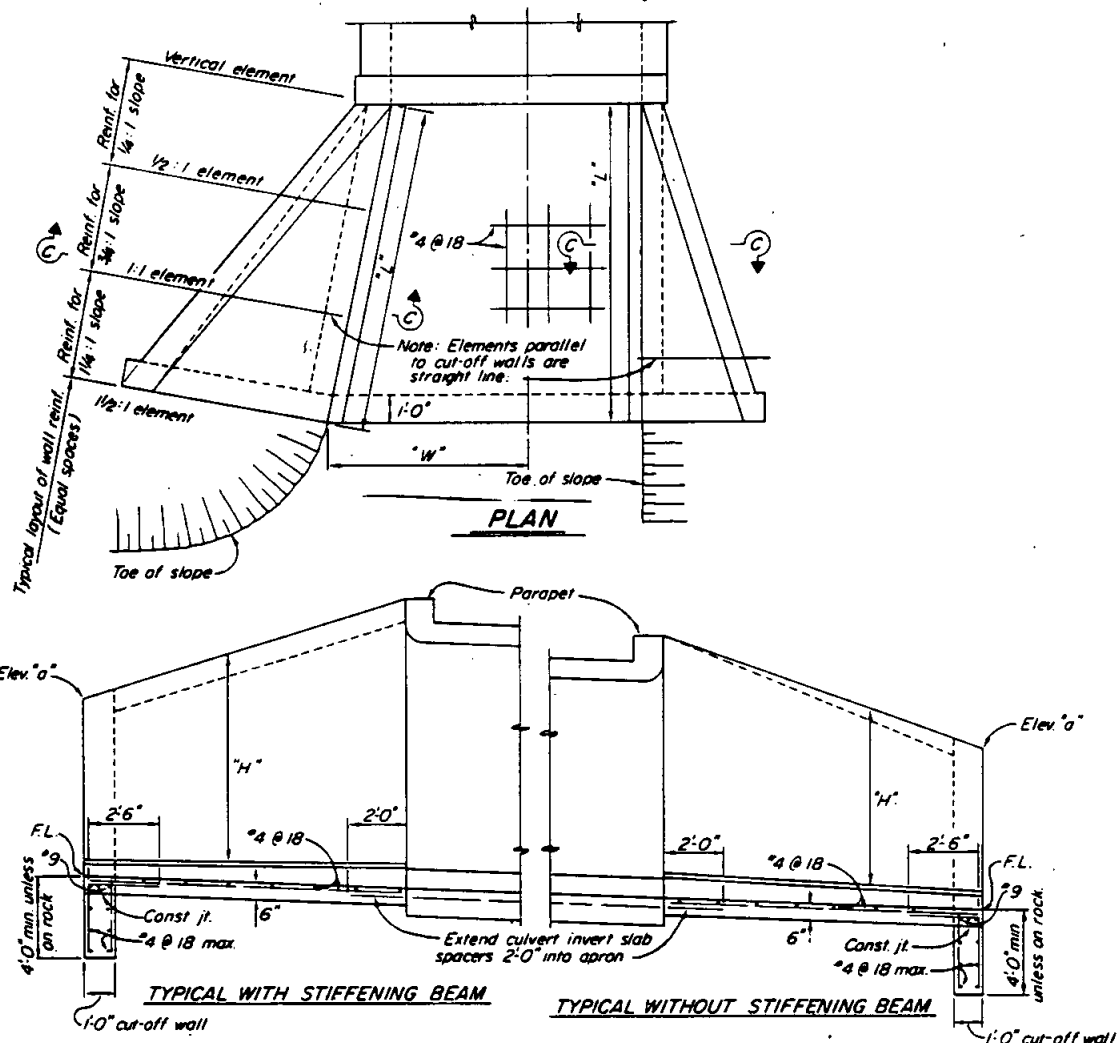
SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allard A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER** **D-79B**



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

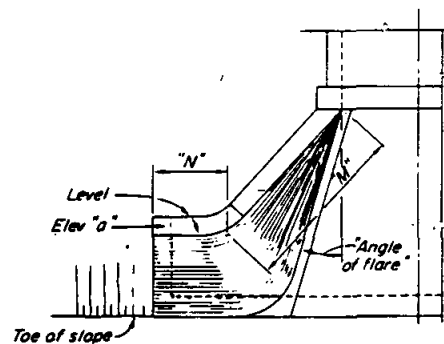
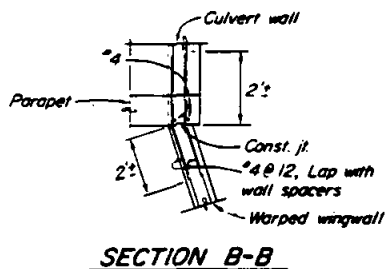
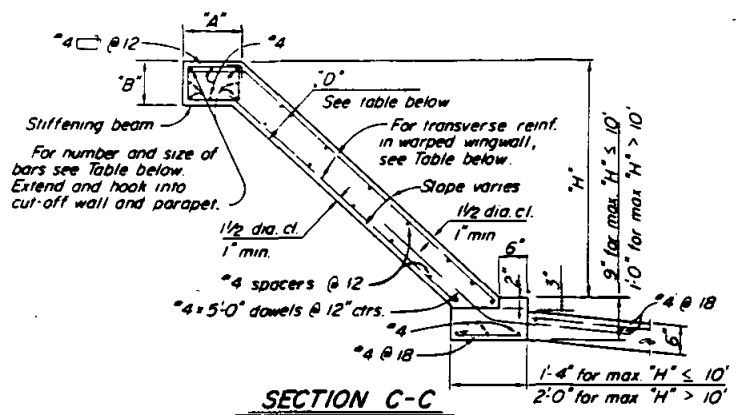
Allen G. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-80A**

SAN DIEGO REGIONAL STANDARD DRAWING

**BOX CULVERT WARPED WINGWALL
DETAILS NO. 1**

Revision	By	Approved	Date
Enlarge	<i>SC</i>	<i>A.H.</i>	9-88



ALTERNATIVE WARPED WINGWALL

Use where additional protection to toe of embankment is required.

WARPED WINGWALLS																							
WALL DIMENSIONS AND REINFORCING									STIFFENING BEAM DIMENSIONS AND REINFORCING														
Element Slope	"H"	8' or less	10'	12'	14'	16'	18'	20'	$\frac{H}{L}$ max	12'	14'	16'	18'	20'	25'	30'	35'	40' or more					
$\frac{1}{4}:1$	Front face reinf.	"4 @ 12"	"4 @ 7"	"5 @ 7"	"5 @ 5"	"6 @ 6"	"7 @ 7"	"7 @ 6"	6"	No beam Place 2'-6" in each face along top of wall													
	Rear face reinf.	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	8"														
$\frac{3}{8}:1$	Front face reinf.	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 10"	"4 @ 8"	"4 @ 6"	10"														
	Rear face reinf.	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 10"	"4 @ 7"	"4 @ 6"	"5 @ 8"	12"														
$1\frac{1}{4}:1$	Front face reinf.	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	14"														
	Rear face reinf.	"4 @ 8"	"4 @ 8"	"4 @ 5"	"5 @ 6"	"6 @ 7"	"6 @ 6"	"7 @ 6"	16"														
"D" at Cut-off Wall										6"	6"	6"	7½"	8"	9½"	11"	18"						
"D" at Culvert										6"	6"	6"	8"	9½"	11"	1'-1"	20"						

Notes: Walls designed for 2' surcharge; earth load = 120' / cu. ft.; equivalent fluid pressure = 36' / cu. ft.
 Vary "D" of warped wall uniformly from that at cut-off wall to that at culvert, for max "H" > 12'.
 Where abrasion is anticipated, increase apron thickness, to 7" min. to provide 2" min. reinforcement coverage.
 Dimensions "L", "W", "H", "M", "N", Elev "a", Angle of flare, and end Slope (as apply) are shown on the plans.
 Concrete shall be class 560-B-3250.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE			
Enlarge	2	A.H.	9-83					Allan A. Kuehnert Dec. 1975			
				BOX CULVERT WARPED WINGWALL				Coordinator R.C.E. 19807 Date			
								DRAWING NUMBER D-80B			
				DETAILS NO. 2							

GENERAL NOTES

QUANTITIES: QUANTITIES ARE FOR THE SLOPED INVERT SLAB AND DO NOT INCLUDE SPLICES IN LONGITUDINAL BARS, NOR TEMPERATURE REINFORCEMENT FOR EXPOSED TOP CULVERT, NOR CONCRETE OR REINFORCEMENT FOR PARAPETS OR CUTOFF WALLS.

SPECIAL COVERAGE: BOX STANDARD PLANS ARE NOT TO BE USED FOR CULVERTS IN A CORROSIVE ENVIRONMENT OR WHERE THERE IS A SEVERE ABRASIVE FLOW CONDITION.

DESIGNATION: SHOW ON PLANS AS SPAN X HEIGHT - STRENGTH CLASSIFICATION X LENGTH. THUS 4 x 4 - A x 60', FOLLOWED BY ALTERNATIVES

ALTERNATIVES: INVERT WILL BE SLOPED UNLESS "TRAPEZOIDAL INVERT", "FLAT INVERT" OR "V INVERT" IS INCLUDED IN DESIGNATION. ENDS OF CULVERT WILL BE ROUNDED UNLESS "SQUARE ENDS" ARE DESIGNATED. PARAPETS WILL BE AS SHOWN UNLESS "___ FT. PARAPET" IS DESIGNATED IN PLANS. SUCH DESIGNATIONS MAY BE DIFFERENT FOR INLET AND OUTLET ENDS.

REINF. PLACEMENT: MAIN REINFORCEMENT IS POSITIONED TRANSVERSE OR, FOR CURVED CULVERTS, RADIAL. WHEN RADIAL, REINFORCING SPACING IS MEASURED ALONG THE ϕ .

CONSTRUCTION NOTES

CONCRETE:

BOTTOM SLAB & WALLS SHALL BE CLASS 360-B-3250
TOP SLAB SHALL BE CLASS 560-C-3250

EXPANSION JOINTS:

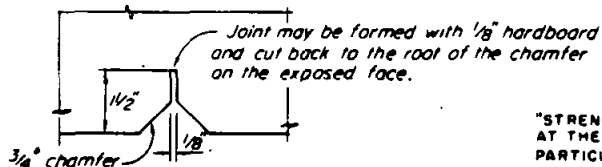
BOTTOM SLAB - NO EXPANSION JOINTS SHALL BE PLACED.
TOP SLAB AND WALLS - WHEN COVER IS LESS THAN SPAN LENGTH, PLACE $\frac{1}{2}$ " EXPANSION JOINT FILLER AT 50'± CENTERS OUTSIDE THE PAVED ROADWAY LANES AND PLACE BRIDGE DETAIL 3-2 AT 50'± CENTERS UNDER PAVED ROADWAY LANES.
WHEN COVER IS MORE THAN SPAN LENGTH, PLACE $\frac{1}{2}$ " EXPANSION JOINT FILLER AT 30'± CENTERS AND ADDITIONAL $\frac{1}{2}$ " EXPANSION JOINTS AT LOCATIONS OF CHANGE IN FOUNDATION CHARACTER, AS DIRECTED BY THE ENGINEER.

CONSTRUCTION LOADS:

NOT PERMITTED UNTIL CONCRETE HAS REACHED A STRENGTH OF 3,000 PSI OR AGE OF 28 DAYS, WHICHEVER OCCURS FIRST, AND FALSEWORK PLANS HAVE BEEN SUBMITTED BY THE CONTRACTOR, TO THE ENGINEER, AND APPROVED.

CONSTRUCTION JOINTS:

TEMPORARY JOINTS MAY BE PERMITTED IF NORMAL (OR RADIAL) TO ϕ OF RCB. OTHERWISE, THE CONTRACTOR IS TO SUBMIT A PROPOSAL FOR CONSIDERATION



BRIDGE DETAIL 3-2
(Portion)

See Standard Drawing C-15

DESIGN NOTES

SPECIFICATIONS:

DESIGN: A A S H O DATED 1973 WITH REVISIONS AND AS SUPPLEMENTED BY STATE OF CALIFORNIA BRIDGE PLANNING AND DESIGN MANUAL.

SECTIONS DESIGNED FOR CULVERT IN A TRENCH ON HARD FOUNDATION, OR CULVERT UNTRENCHED ON YIELDING FOUNDATION. FOR CULVERTS ON PILES OR ROCK FOUNDATIONS, SPECIAL DESIGN WILL BE REQUIRED

LOADING:

LIVE LOAD: FOR LEGAL HIGHWAY LOADS, USE HS20-44 OR ALTERNATIVE, WITH 30% IMPACT FOR ALL COVER DEPTHS. NO IMPACT ON INVERT COVER LESS THAN 2'-

WHEEL LOAD DISTRIBUTION ON THE TOP SLAB IS $E = 0.175S + 3.2'$ LONGITUDINALLY AND CONCENTRATED ALONG THE SPAN. WHEEL LOAD DISTRIBUTION ON THE INVERT SLAB IS 7.5' LONGITUDINALLY AND UNIFORMLY OVER THE BREADTH OF THE CULVERT

COVER 2' OR MORE -

WHEEL LOADS DISTRIBUTED UNIFORMLY OVER A SQUARE, THE SIDES OF WHICH ARE 1.75 TIMES THE DEPTH OF COVER, BUT NOT LESS LONGITUDINALLY THAN E ON THE TOP SLAB, OR 7.5' ON THE INVERT SLAB. WHEN SUCH AREAS FROM SEVERAL WHEEL CONCENTRATIONS OVERLAP, THE TOTAL LOAD SHALL BE CONSIDERED AS UNIFORMLY DISTRIBUTED OVER THE AREA DEFINED BY THE OUTSIDE LIMITS OF THE INDIVIDUAL AREAS, BUT THE OVERALL LONGITUDINAL DIMENSION SHALL NOT EXCEED THE TOTAL LENGTH OF THE SUPPORTING SLAB. NEGLECT LIVE LOAD ON SINGLE SPANS WHEN COVER IS MORE THAN 8' AND EXCEEDS SPAN, AND ON MULTIPLE SPANS WHEN COVER EXCEEDS DISTANCE BETWEEN EXTERIOR WALLS.

DEAD LOAD: EARTH LOAD OF 120 PCF AND AN EQUIVALENT FLUID PRESSURE OF 36 PCF, REDUCED TO 84 PCF AND 25 PCF RESPECTIVELY FOR CLEAR SPANS OF 20' OR LESS.

UNIT STRESSES: $F_t = 20,000 \text{ PSI}$, $N = 10$

$F_c = 1,200 \text{ PSI}$

REINFORCEMENT EMBEDMENT IS $\frac{1}{2}$ " DIA CLEAR, MIN 1" AND IN $\frac{1}{4}$ " INCREMENTS, EXCEPT AS NOTED

DISTRIBUTION "d" BARS EXPRESSED AS A % OF MAIN POSITIVE REINFORCEMENT

CLASSIFICATION "A": TOP SLAB = $\frac{100}{\text{SPAN}}$, MAX 50% (UNLESS TRAFFIC LONGITUDINAL)

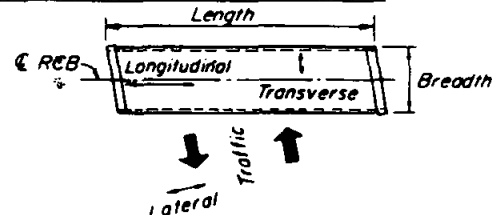
BOTTOM SLAB = #4 @ 18" MAX

CLASSIFICATION "B" TO "E": TOP AND BOTTOM SLABS #4 @ 18" MAX.

USE OF STANDARD DRAWING

"STRENGTH CLASSIFICATION", SYMBOLIZED BY THE LETTERS "A", "B", "C" ETC., AT THE TOP OF THE DATA TABLE IS MERELY A CONVENIENT DESIGNATION FOR A PARTICULAR STRUCTURAL SECTION FOR A CULVERT OF ANY GIVEN OPENING. IT IS DICTATED BY THE COVER OR DEPTH OF FILL OVER THE TOP SLAB

LIVE LOAD & RCB DIRECTIONAL TERMINOLOGY



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

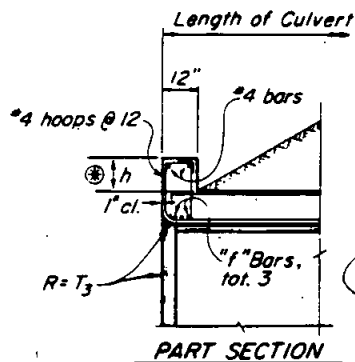
Atwood & Kinsland Dec. 1975
Coordinator R.C.E. 19887 Date

DRAWING NUMBER **D-81A**

SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT
MISCELLANEOUS DETAILS NO. 1

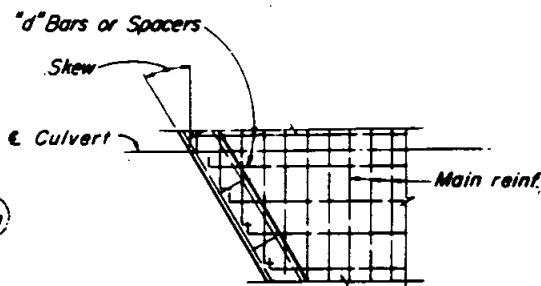
Revision	By	Approved	Date
Enlarge	<i>CH</i>	<i>G.H.</i>	10/75
JOINT	<i>CH</i>	<i>G.H.</i>	2/76



PART SECTION

$$h'' = S', 6'' \text{ min.}$$

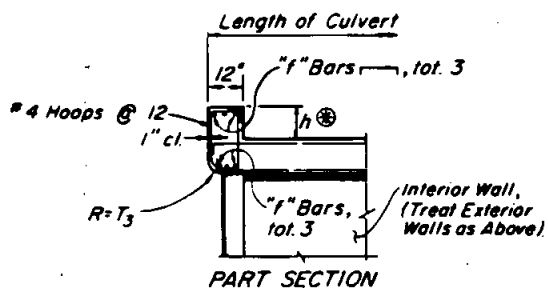
$$h'' = S'$$



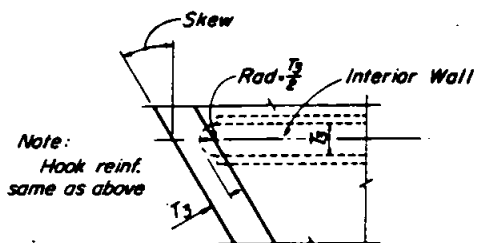
PART PLAN - SKEWED

PARAPET DETAILS FOR SINGLE SPAN CULVERTS

PARAPET "1" BAR NOS.			
SPAN	SKEW ANGLE	0° TO 15°	16° TO 30°
	31° TO 45°		
4'		#4	#4
6'		#4	#5
8'		#4	#6
10'		#5	#7
12'		#6	#8
14'		#7	#9

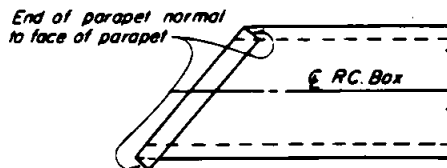


PART SECTION

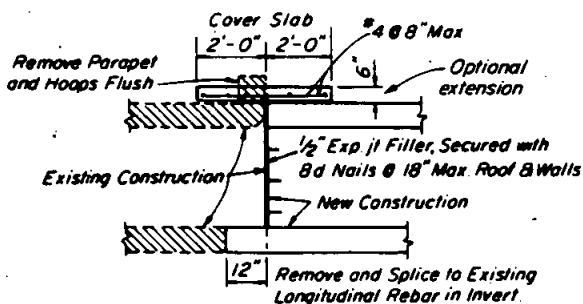


PART PLAN - SKEWED

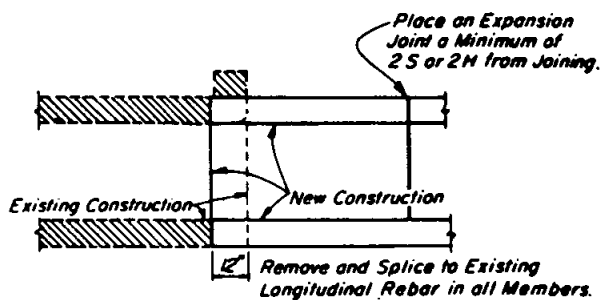
PARAPET DETAILS FOR MULTIPLE SPAN CULVERTS



PARAPET DETAIL FOR SKEWED CULVERTS W/O WINGWALLS



COVER: 1' AND GREATER



COVER: EXPOSED TOP AND GREATER

CULVERT EXTENSION

20° SKEW MAXIMUM

Revision	By	Approved	Date
Enlarge	20	A.H.	10/88

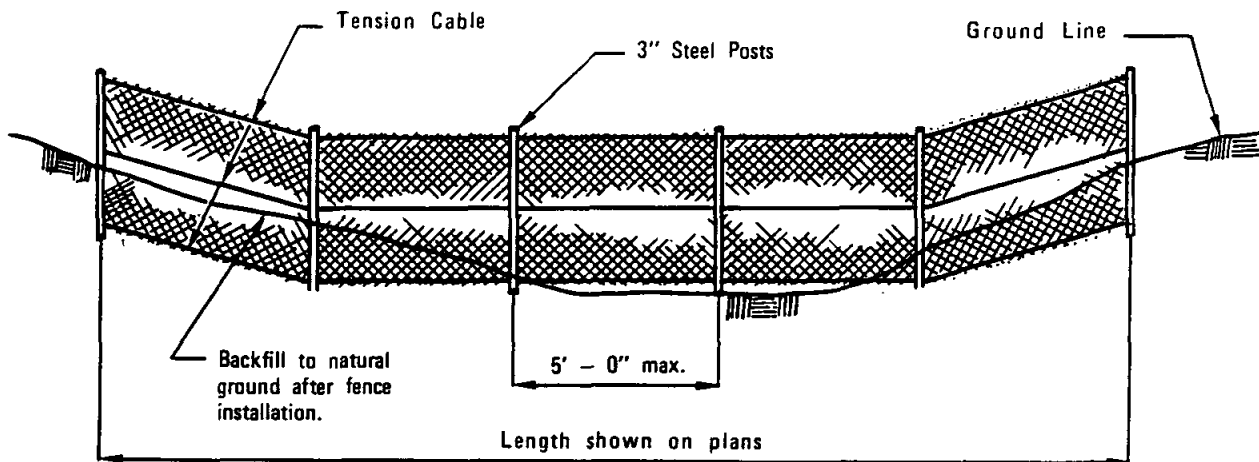
SAN DIEGO REGIONAL STANDARD DRAWING

**BOX CULVERT
MISCELLANEOUS DETAILS NO. 2**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen G. Kneeland Dec. 1975
Coordinator R.C.E. 18807 Date

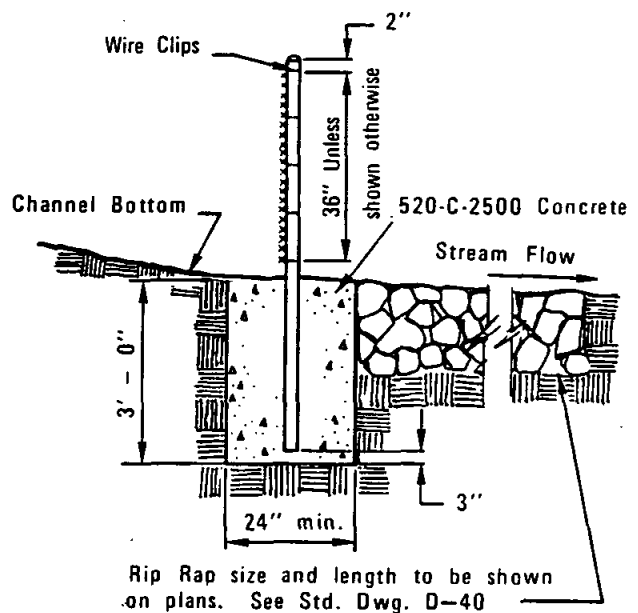
DRAWING NUMBER **D-81B**



ELEVATION

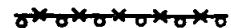
NOTES:

1. Fence fabric shall be 2" mesh, 9 gage galvanized wire, chainlink placed on the upstream side of the posts and tension cables.
2. Tension cable shall be 5/16" diameter steel at 18" c/c secured at ends with cable clamps. Secure fence to cable with No. 12 galv. steel wire looped at 6" c/c.
3. Posts shall be 3" diameter steel pipe, 5.79 lb./ft. Fill with mortar after placing.
4. Fence fabric shall be secured to posts with 9 gage wire clips at 9" c/c.



SECTION

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Harry R. Holt Oct 1982
Chairman A.C.E. C13768 Date

DRAWING
NUMBER

D-82

SAN DIEGO REGIONAL STANDARD DRAWING

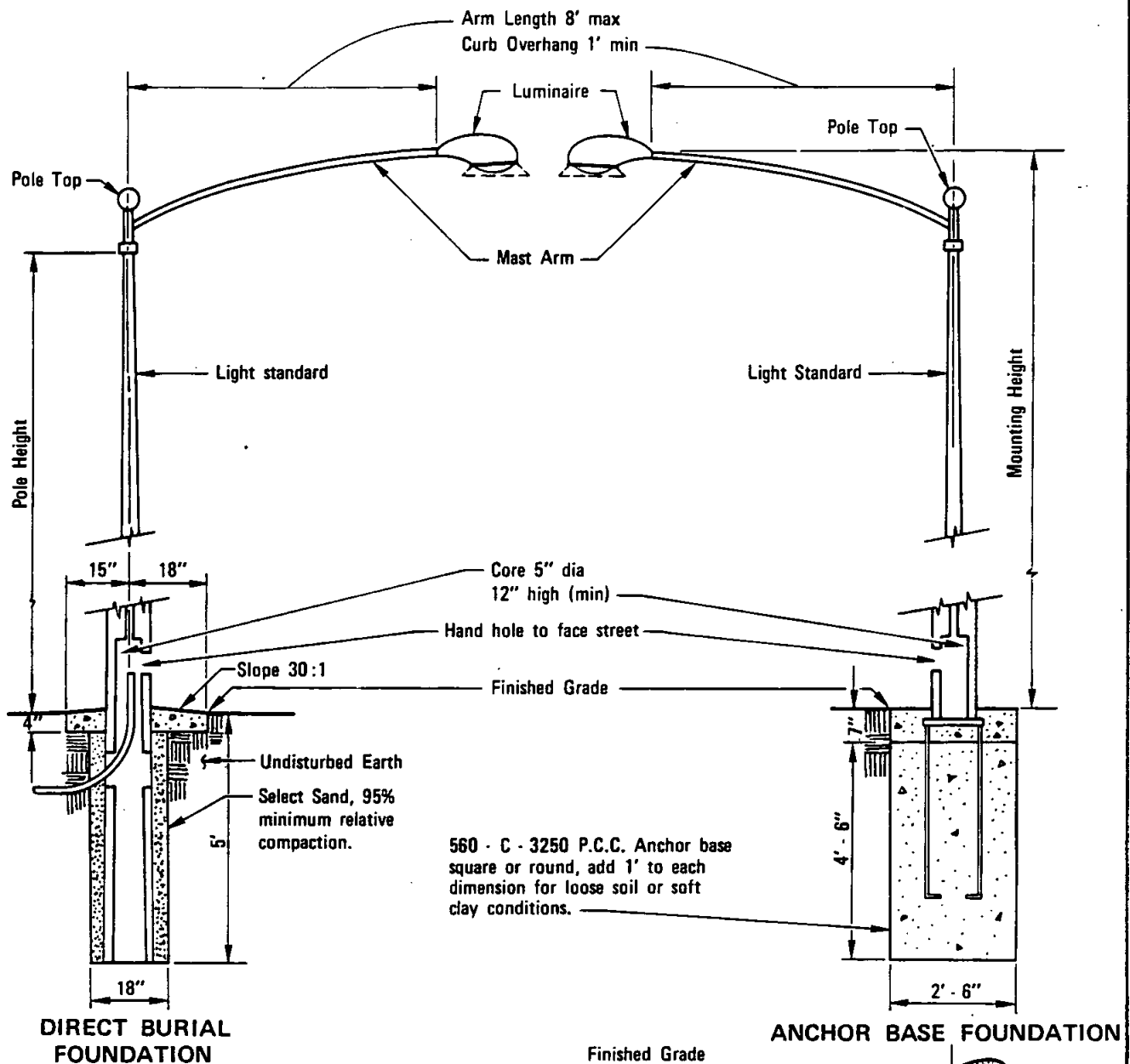
DEBRIS FENCE

Revision	By	Approved	Date

ELECTRICAL SYSTEMS

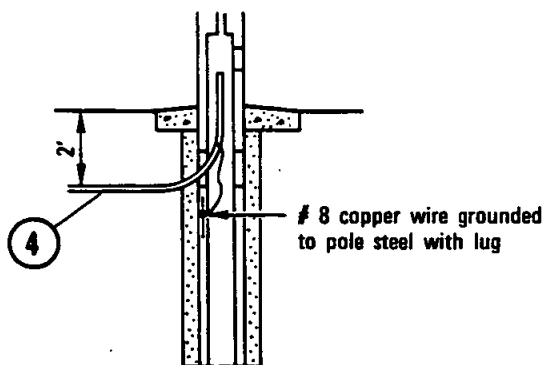
ELECTRICAL SYSTEMS

E

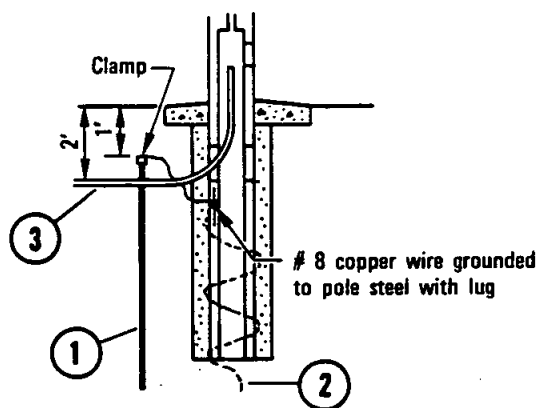


POLE HEIGHT	MOUNTING HEIGHT	LAMP SIZE (WATTS)
25' ± 2'	27' ± 1'	170 M.V. 100 H.P.S. 90 L.P.S.
28' ± 2'	30' ± 1'	400 M.V. 250 H.P.S. 180 L.P.S.
23' - 0"	26' - 9"	70 H.P.S.
26' - 6"	30' - 0"	150 H.P.S.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Table	SC	M.B.	5-86	STREET LIGHTING STANDARD		<i>Allen A. Keshner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date
						DRAWING NUMBER E-1

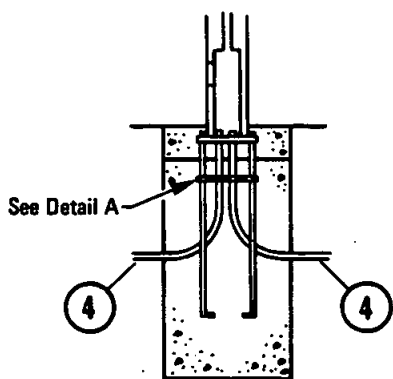


STEEL CONDUIT

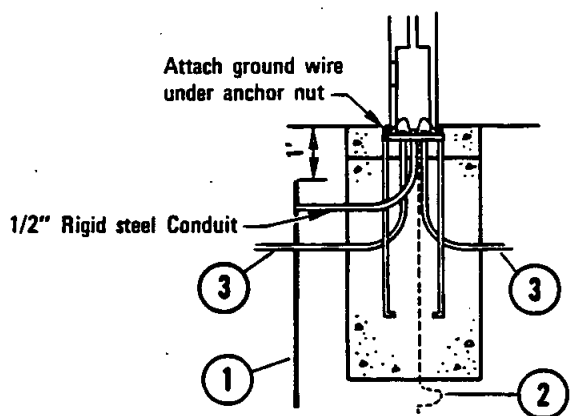


NON-METALLIC CONDUIT

DIRECT BURIAL FOUNDATION



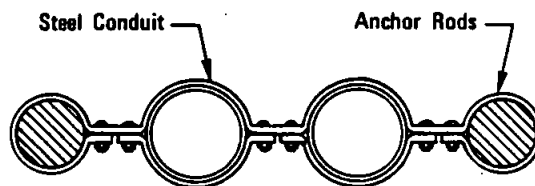
STEEL CONDUIT



NON-METALLIC CONDUIT

ANCHOR BASE FOUNDATION

- ① 3/4" x 8' copper covered steel ground rod.
- ② Alternate Ground: 15' no. 4 bare stranded copper wire, coiled.
- ③ Approved non-metallic conduit.
- ④ Steel conduit.



DETAIL A

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allan G. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER E-2

SAN DIEGO REGIONAL STANDARD DRAWING

GROUNDING
OF CONCRETE LIGHTING STANDARDS

Revision	By	Approved	Date

1 1/2" min. cover for bars and conduits.

Galvanized steel conduits.
Size and number as required.

PLAN

1/4" X 2" galvanized steel bars.

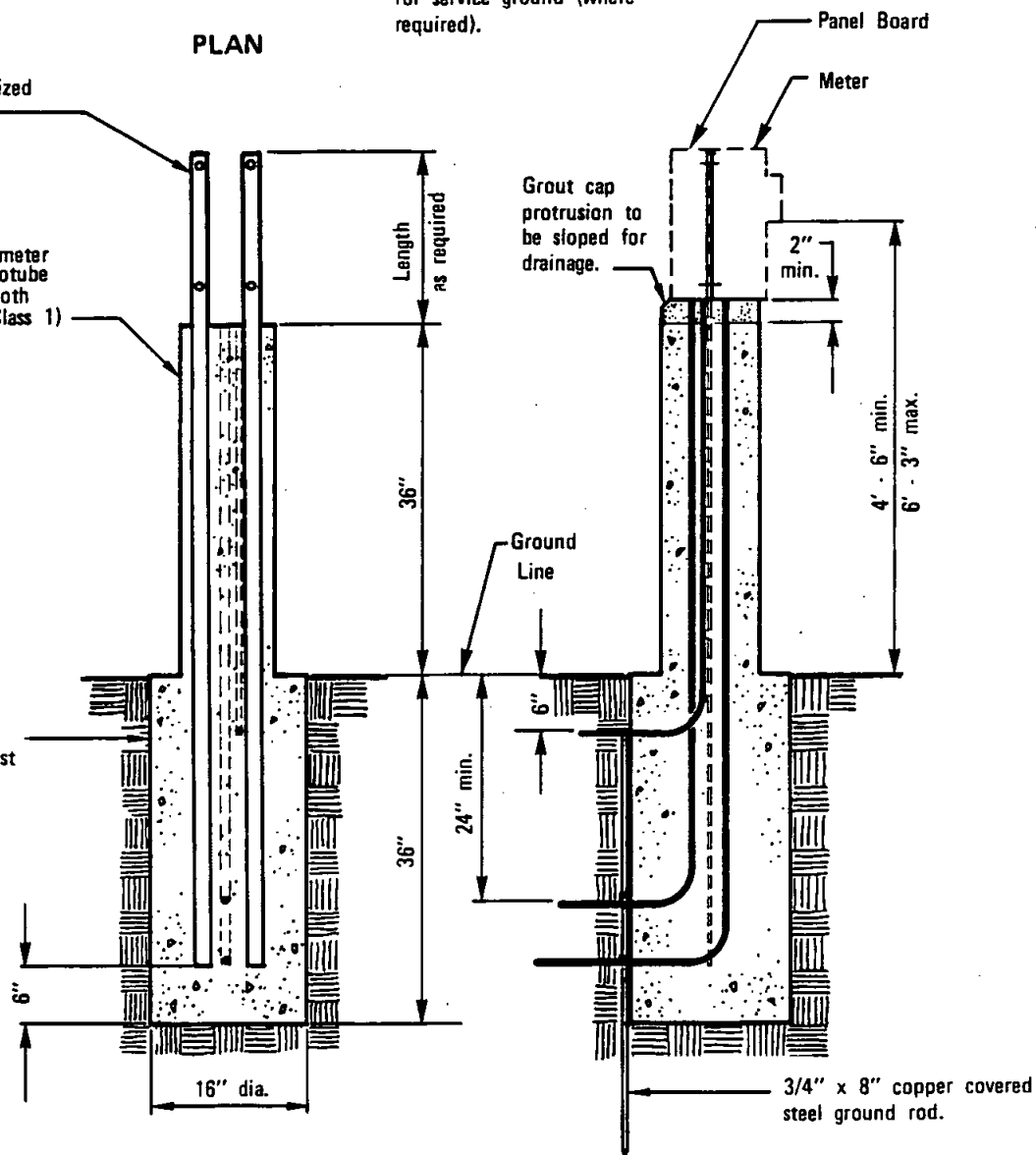
10" Diameter use Sonotube for smooth finish. (Class 1)

Permissible to auger hole and pour against soil.

NOTE:

Concrete shall be class 560-C-3250

1" galvanized steel conduit for service ground (where required).



SECTION A-A

STEEL & CONCRETE
DIMENSIONS

SECTION B-B

CONDUIT & EQUIPMENT

Revision	By	Approved	Date
Conc.	<i>MB</i>	<i>MB</i>	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTAL FOR
ELECTRICAL EQUIPMENT

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

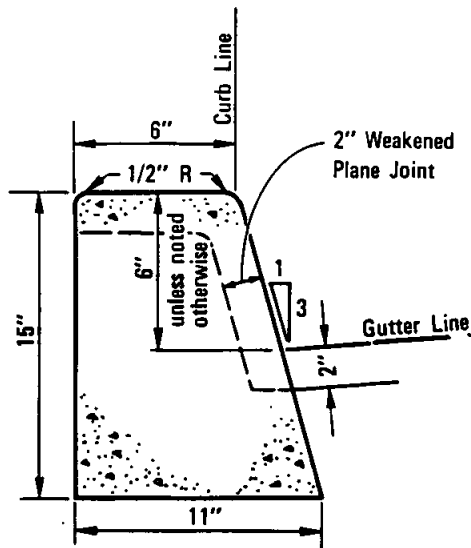
DRAWING
NUMBER

E-33

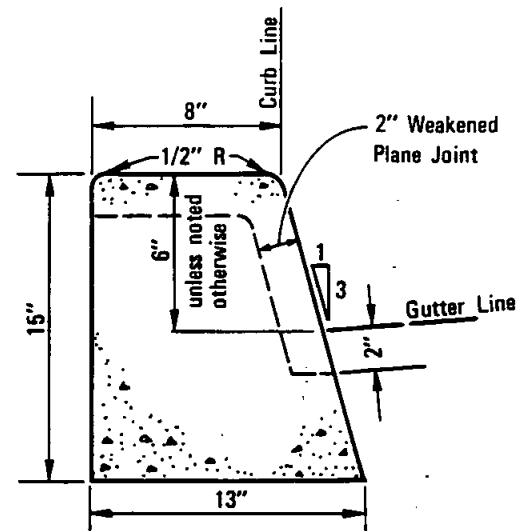
GENERAL SURFACE IMPROVEMENTS

G

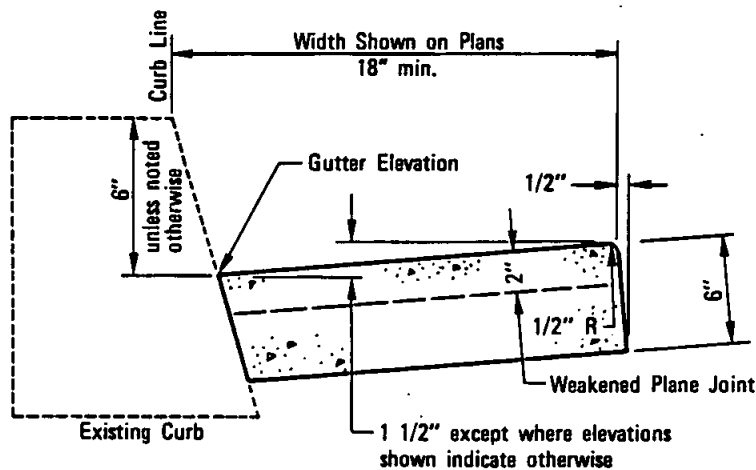
GENERAL SURFACE IMPROVEMENTS



6" CURB
Area = 0.89 SQ. FT.



8" CURB
Area = 1.09 SQ. FT.



GUTTER

NOTES:

1. Concrete shall be 520-C-2500.
2. See Standard Drawing G-10 for joint details.
3. Slope top of curb 1/4" per foot toward street.

LEGEND ON PLANS

6" curb

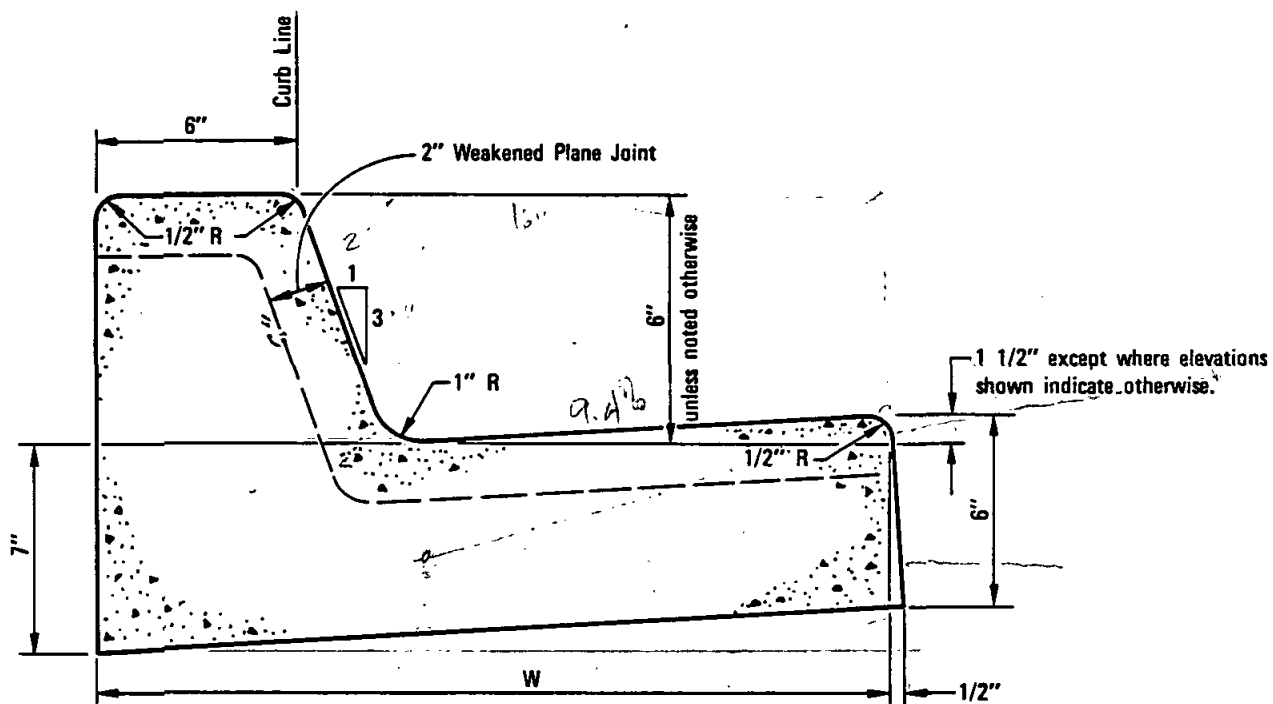
Revision	By	Approved	Date
Conc.	JP	M.E.	5-86
Note 3	SC	A.H.	7-88

SAN DIEGO REGIONAL STANDARD DRAWING

CURBS AND GUTTER - SEPARATE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allen G. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **G-1**



TYPE G & H CURB

TYPE	W	* AREA SQ. FT.
G	24"	1.34
H	30"	1.61

* with 6" Curb Face

NOTES:

1. Concrete shall be 520-C-2500.
2. See Standard Drawing G-10 for joint details.
3. Slope top of curb 1/4" per foot toward street.

LEGEND ON PLANS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan Q. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

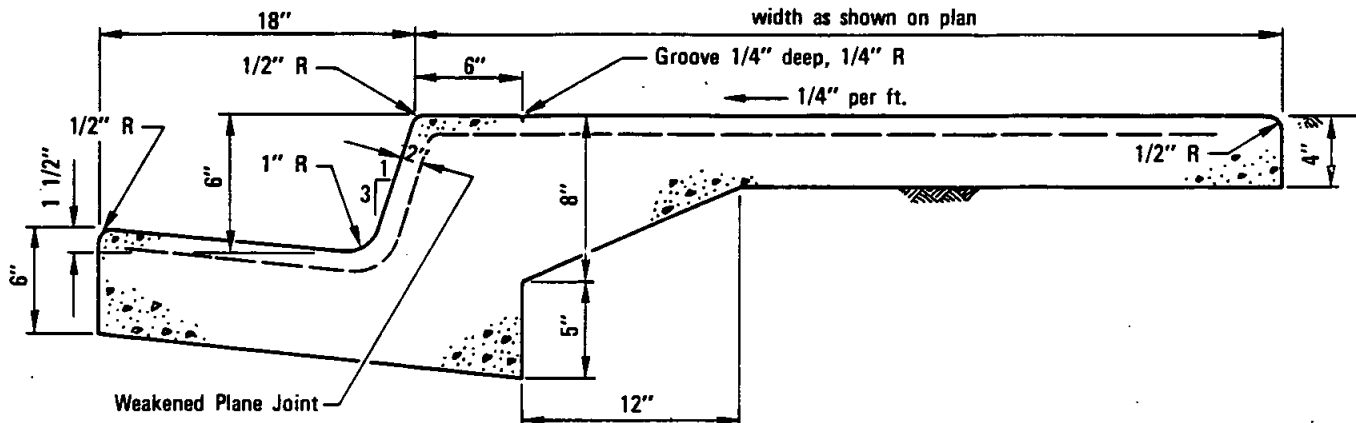
DRAWING
NUMBER

G-2

SAN DIEGO REGIONAL STANDARD DRAWING

CURB AND GUTTER - COMBINED

Revision	By	Approved	Date
Conc.	<i>MC</i>	<i>M.B.</i>	<i>5-86</i>
Note 3	<i>MC</i>	<i>A.H.</i>	<i>7-88</i>



NOTES

1. Concrete shall be 520-C-2500.
2. See Standard Drawing G-10 for joint details.
3. Monolithic curb, gutter and sidewalk is to be used with Agency approval only.

LEGEND ON PLANS

Revision	By	Approved	Date
Thickness	SE	D.S.	7-79
Thickness	SH	M.B.	6-82
Conc.	SC	M.B.	5-86

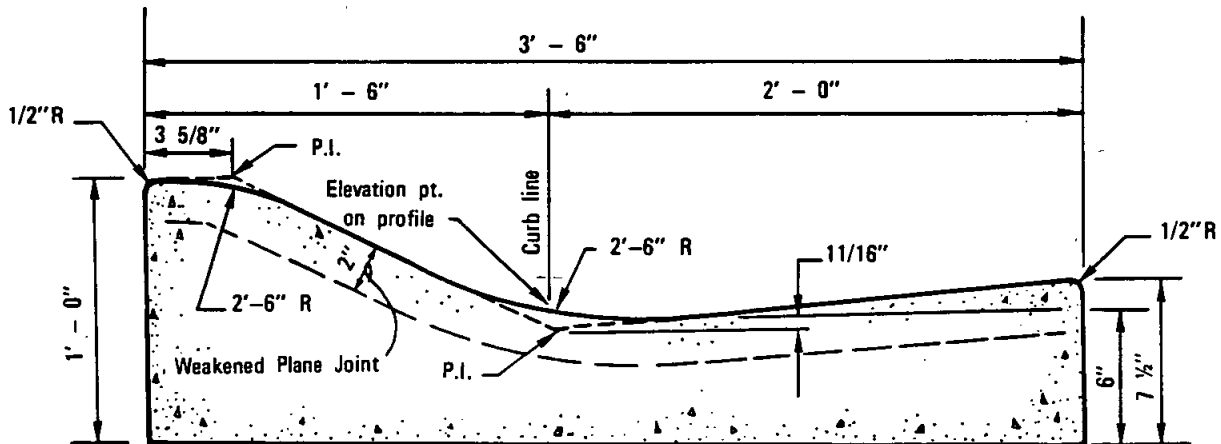
SAN DIEGO REGIONAL STANDARD DRAWING

MONOLITHIC CURB, GUTTER AND SIDEWALK

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kerschbaum *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **G-3**



CURB AREA
(2.23 sq. ft.)

NOTES:

1. Transition to type G curb at all curb returns, except where sidewalk ramps are provided, and at all cul-de-sacs with drainage structures.
2. See Standard Drawing D-6.1 for Rolled Curb Inlet.
3. Concrete shall be 520-C-2500.
4. See Standard Drawing G-10 for joint details.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

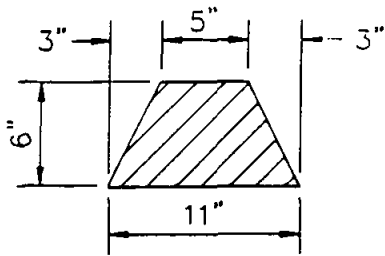
Allen S. Kerschbaum Dec. 1975
Coordinator R.C.E. 13807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

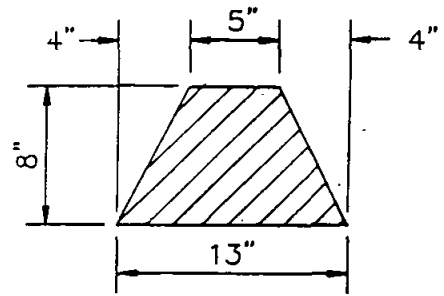
CURB AND GUTTER-ROLLED

Revision	By	Approved	Date
X-Sect.	TRP	M.B.	10-82
Conc.	✓	M.B.	5-86

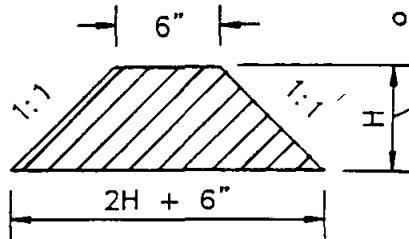
**DRAWING
NUMBER G-4**



TYPE A-SECTION



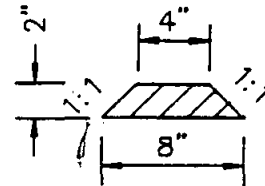
TYPE B-SECTION



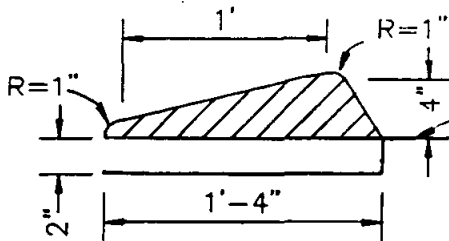
TYPE C-SECTION

Height 6", 8", or 9" as indicated on plans

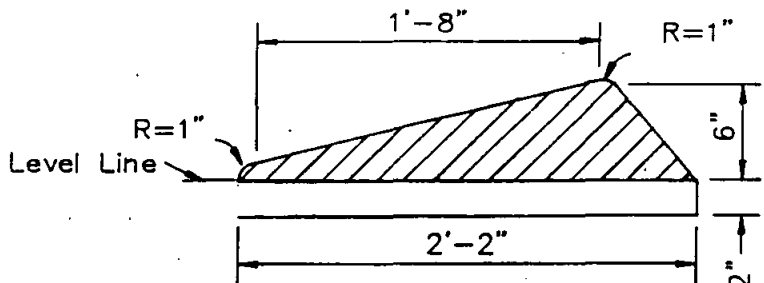
IF H = 6"
H = 8"
H = 9"



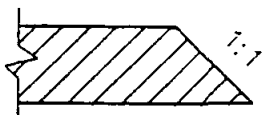
TYPE D-SECTION



TYPE E-SECTION



TYPE F-SECTION



Slope end of dike 1:1 when not joining other improvements

ALL TYPES - SIDE VIEW

NOTES:

1. Dike is to be placed on a minimum 2" of A.C. road surfacing, extending throughout the width of the dike.
2. AR-8000 grade asphalt to be used for all dikes.
3. A.C. dikes may be shaped and compacted with an extrusion machine or other equipment capable of shaping and compacting the material to the required cross section.

APPROX. DIKE QUANTITIES	
TYPE	TONS/LIN. FT.
A	0.0250
B	0.0375
C-6"	0.0375
C-8"	0.0583
C-9"	0.0702
D	0.0062
E	0.0194
F	0.0452

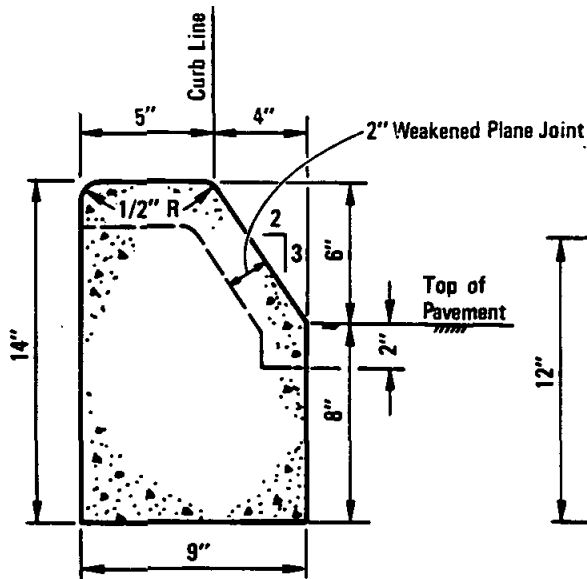
LEGEND ON PLANS

Type A Dike

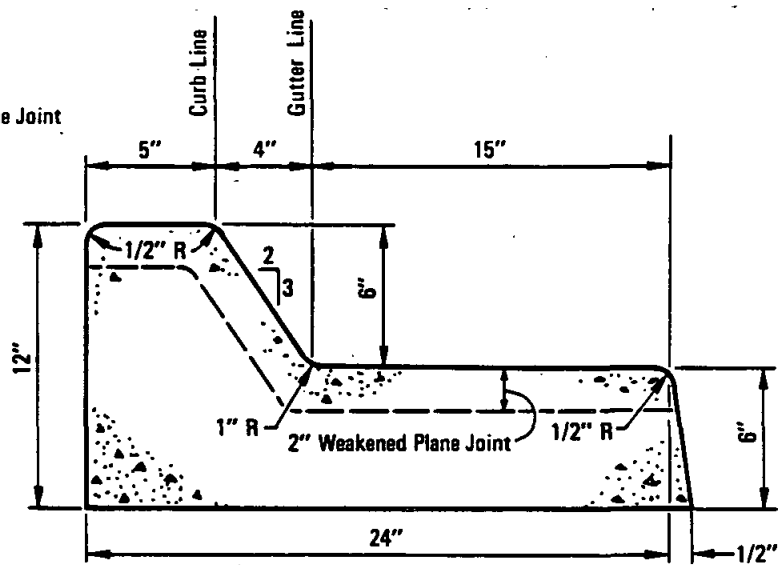
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Type E	SC	QH	10/88				
Type F	SC	QH	10/88	DIKES - ASPHALT CONCRETE		<i>Allen A. Kershner</i> Dec. 1975 Coordinator R.C.E. 19807 Date	
Type F	SC	QH	2/95				
						DRAWING NUMBER G-5	

$$S = \frac{1}{2} \times \frac{3}{2} = 1.5$$

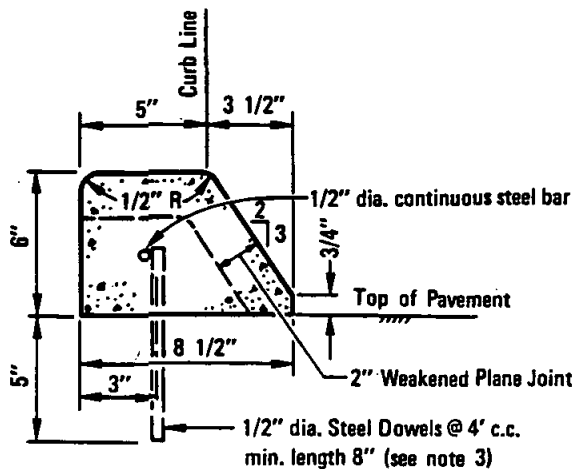
$$= 2.5$$



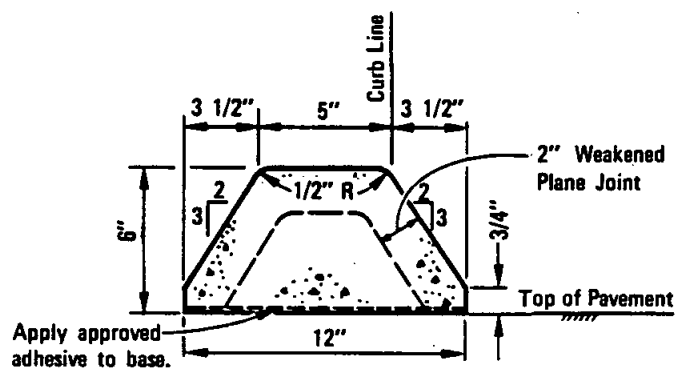
B-1
AREA = 0.79 SQ.FT.



B-2
AREA = 1.29 SQ.FT.



B-3
AREA = 0.29 SQ.FT.



B-4
AREA = 0.35 SQ.FT.

NOTES

1. Concrete shall be 520-C-2500.
2. See Standard Drawing G-10 for joint details.
3. Extruded type B-3 curb shall be anchored to existing pavement by placing steel dowels and reinforcing steel as shown or by using an approved adhesive.

LEGEND ON PLANS

Type B-2 Curb and Gutter

Type B-1, B-3, B-4 Curb

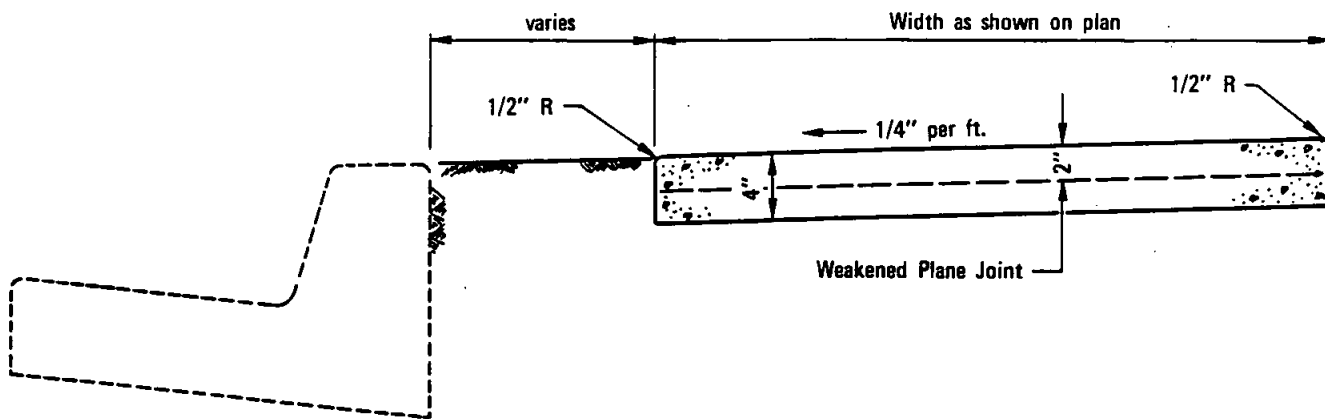
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allen A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

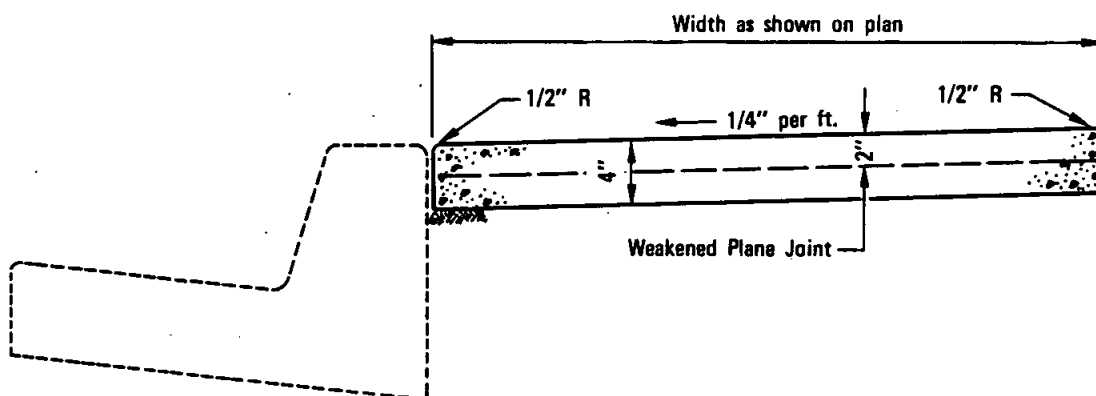
CURBS AND GUTTER - MEDIANS

DRAWING
NUMBER **G-6**

Revision	By	Approved	Date
Note 1	<i>P.S.</i>	<i>P.S.</i>	7.79
Conc.	<i>M.B.</i>	<i>M.B.</i>	5-86



NON-CONTIGUOUS

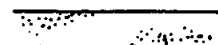


CONTIGUOUS

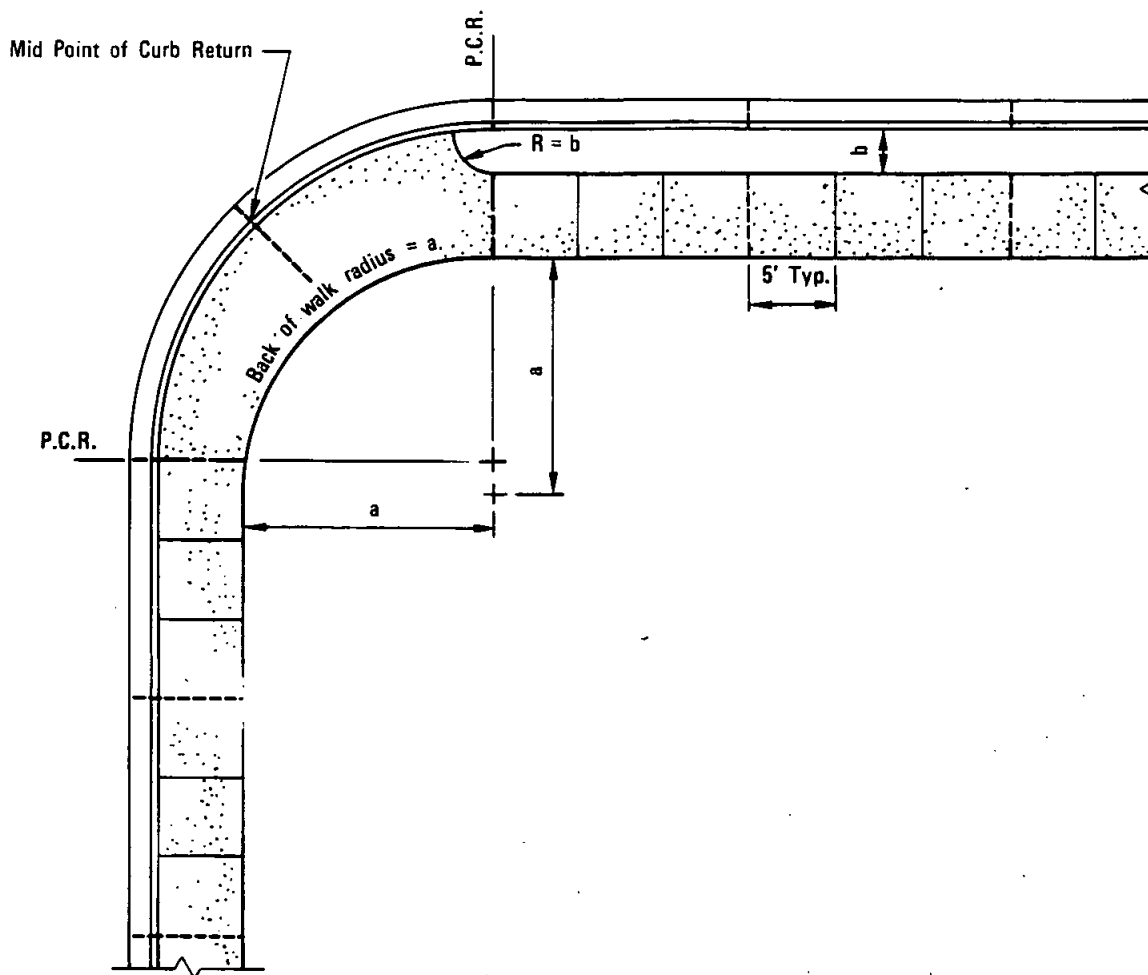
NOTES

- Concrete shall be 520-C-2500.
- See Standard Drawing G-9 and G-10 for joint details.

LEGEND ON PLANS



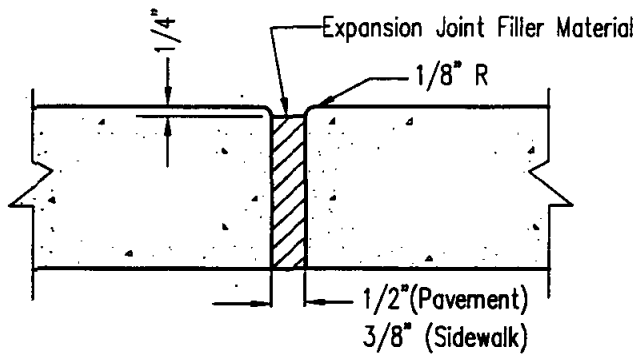
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Thickness	PC	D.S.	7-79			<i>Allen P. Kneeland</i> Dec. 1975 Coordinator R.C.E. 19807 Date	
Thickness	PC	M.B.	6-82				
Conc.	PC	M.B.	5-86				
Note 2	PC	Q.H.	7-88				
				SIDEWALK - TYPICAL SECTIONS		DRAWING NUMBER	
						G-7	



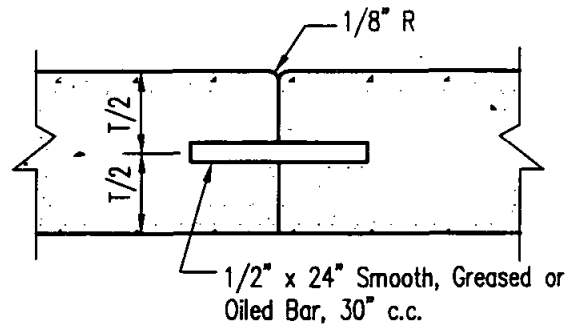
NOTES

1. Expansion Joints ——— at curb returns, adjacent to structures and at 45' intervals. (See Standard Drawing G-10).
2. Weakened Plane Joints - - - - - at mid point of curb return, when required, and at 15' intervals from P.C.R.'s (See Standard Drawing G-10).
3. 1/4" grooves ——— with 1/4" radius edges at 5' intervals.

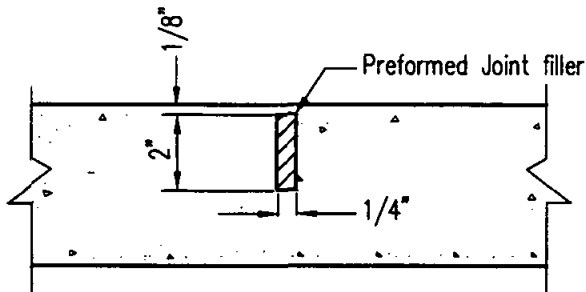
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
Note 4	PC	M.B.	5-86	SIDEWALK JOINT LOCATIONS	
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Robert S. Kershner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	
				DRAWING NUMBER G-9	



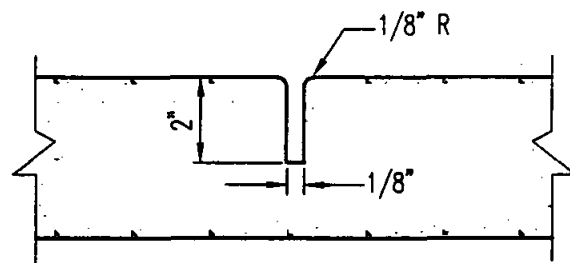
EXPANSION JOINT



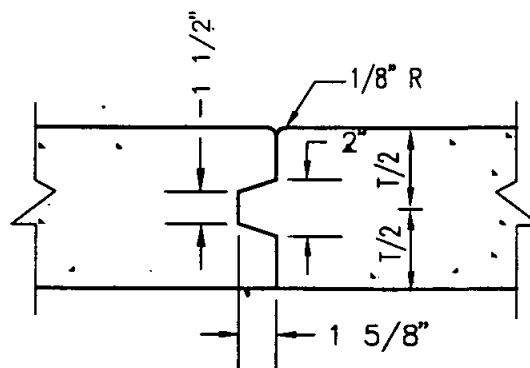
CONTACT JOINT



WEAKENED PLANE JOINT
GUTTER AND PAVEMENT



WEAKENED PLANE JOINT
CURB AND SIDEWALK



KEYED JOINT

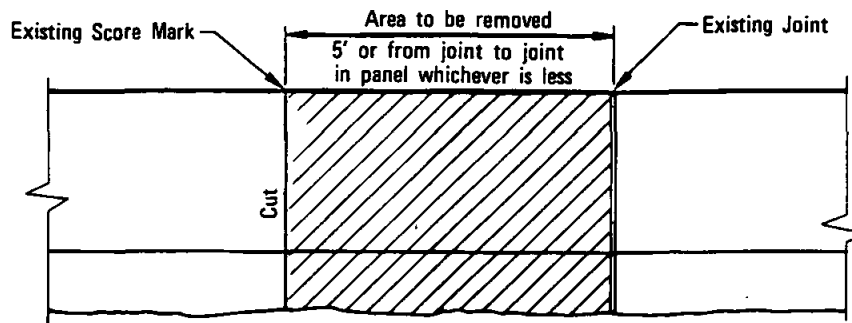
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
[Signature] 2-75
Chairman R.C.E. 25902 Date

SAN DIEGO REGIONAL STANDARD DRAWING

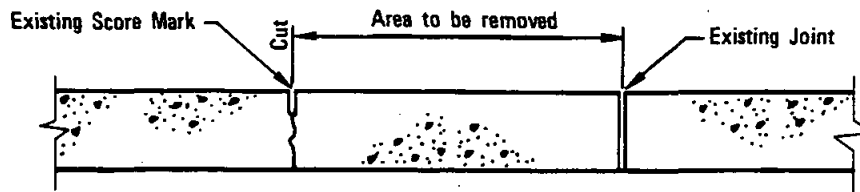
CONCRETE JOINT DETAILS

Revision	By	Approved	Date
Spelling	OM	O. H. H. H.	2-75

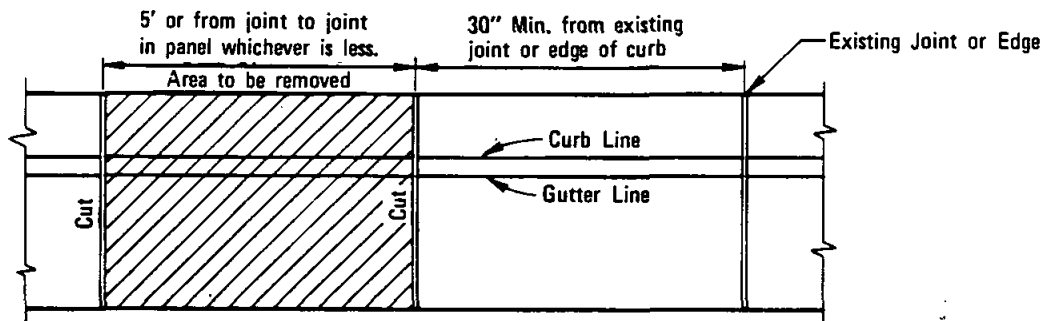
DRAWING
NUMBER G-10



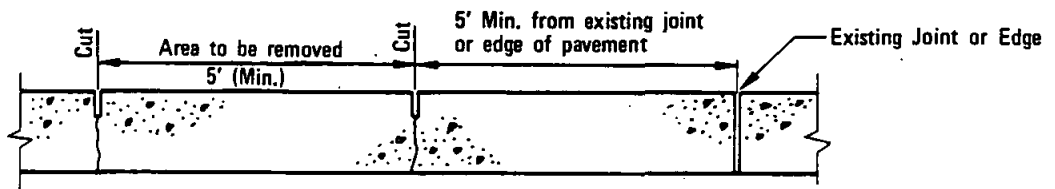
SIDEWALK PLAN



SIDEWALK SECTION



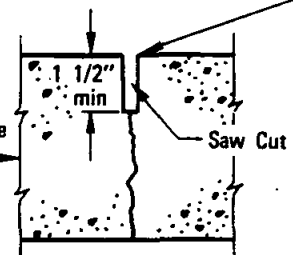
CURB PLAN



PAVEMENT SECTION

Remaining edge to be smooth and true with no shatter.

Portland cement concrete to be removed



SECTION Showing Cut

NOTE

When distance from, "Area to be removed", to existing joint, edge or score mark is less than minimum shown, "Area to be removed" shall be extended to that joint, edge or score mark.

Revision	By	Approved	Date
Pvmt. min.	<i>W.D.</i>	<i>5-86</i>	
Notes	<i>Q.H.</i>	<i>9/88</i>	

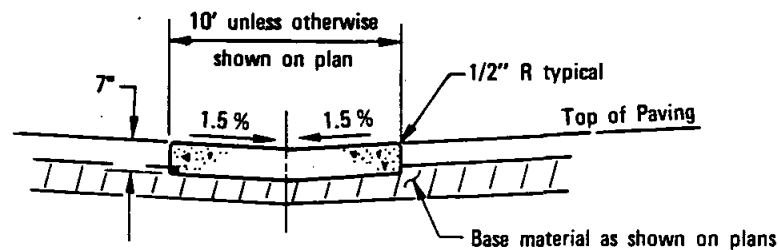
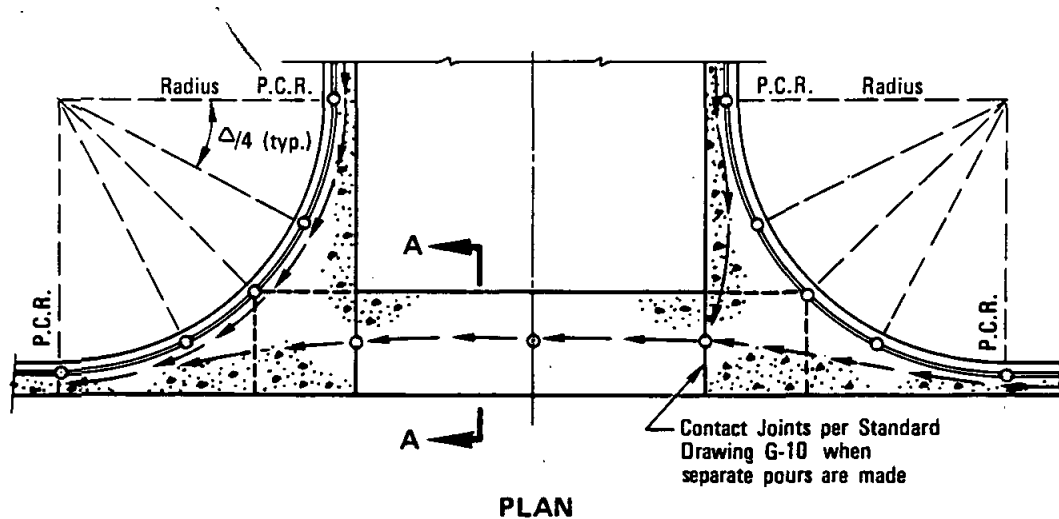
SAN DIEGO REGIONAL STANDARD DRAWING

PORTLAND CEMENT CONCRETE CURB, GUTTER, SIDEWALK AND PAVEMENT REMOVAL AND REPLACEMENT

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen P. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING NUMBER G-11



SECTION A-A

NOTES:

1. Concrete shall be 560-C-3250.
2. ----- = Weakened plane joints.
3. <-----> = Typical flowlines.
4. O = Elevations to be shown on plans.
5. Return segments to be 7" Thick.
- * 6. Curb between P.C.R.s shall be considered as part of cross gutter. *
7. In all cases subgrade shall be compacted to 95% min relative compaction to a depth of 12".

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

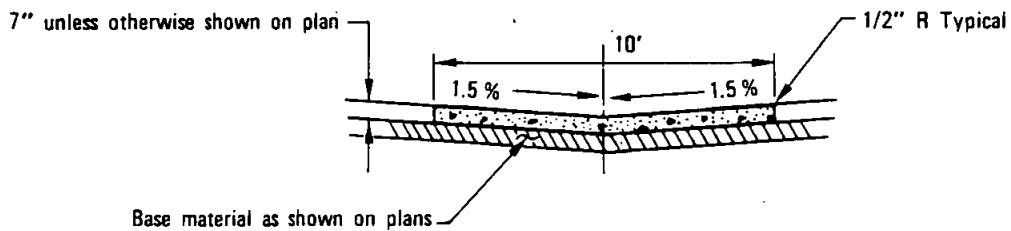
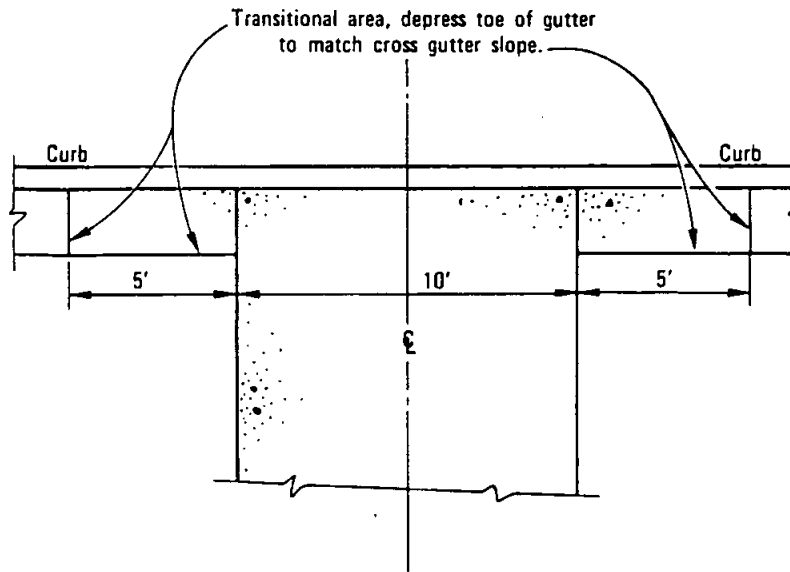
Allan O. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER G-12

SAN DIEGO REGIONAL STANDARD DRAWING

CROSS GUTTER

Revision	By	Approved	Date
Thickness	3C	D.S.	7-79
Note 1	TRP	M.B.	10-82
Note 6	RC	M.B.	5-86
Note 7	JP	GL	5-92



NOTES:

1. Cross gutter to be constructed where the drainage is carried across street.
2. Minimum allowable cross slope is 0.5 %.
3. Concrete shall be 560-C-3250.
4. In all cases subgrade shall be compacted to 95% minimum relative compaction to a depth of 12".

LEGEND ON PLANS



Revision	By	Approved	Date
Thickness	TRP	O.S.	7-79
Conc.	TRP	M.B.	10-82
Thickness	JY	G.A.	5-92

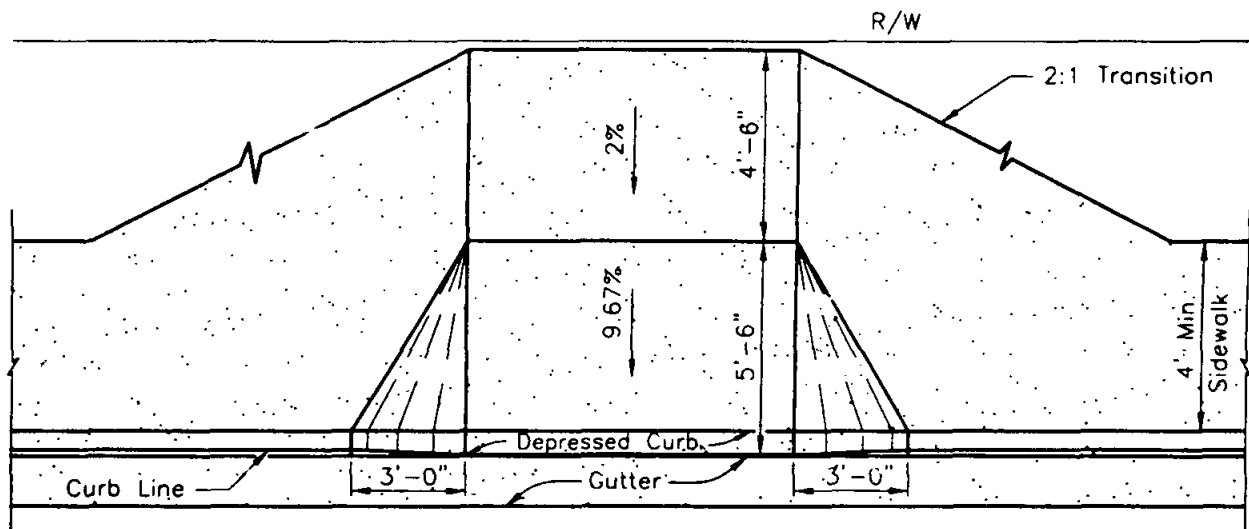
SAN DIEGO REGIONAL STANDARD DRAWING

MID-BLOCK CROSS GUTTER

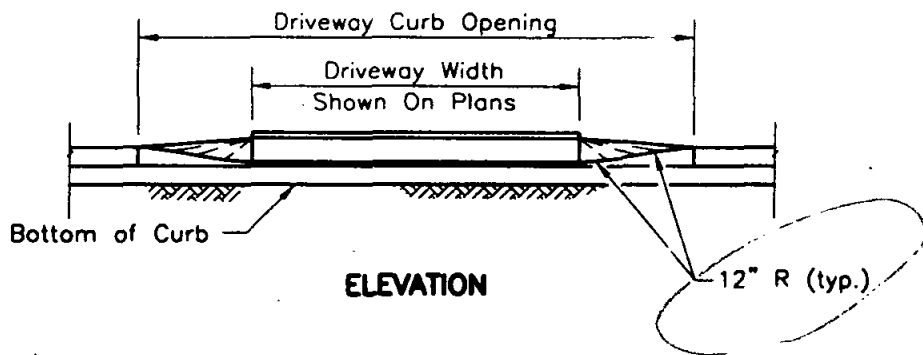
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

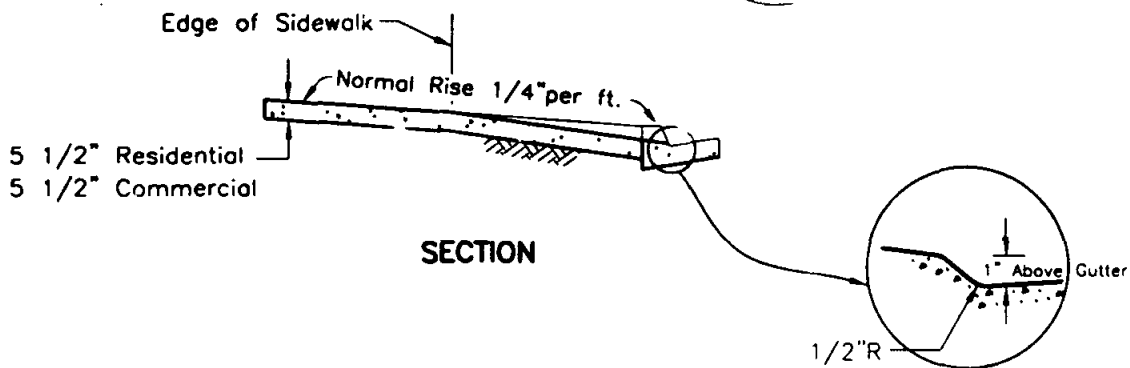
DRAWING
NUMBER **G-13**



PLAN



ELEVATION



SECTION

NOTES

1. No concrete shall be placed until forms and subgrade are inspected by the Agency.
2. Concrete shall be 520-C-2500.
3. See Standard Drawings G-15 and G-16 for width and location requirements
4. Driveway ramp to extend to 10 feet from curb face or to property line whichever is less. (For commercial driveways only)
5. See Standard Drawings G-2 and G-10 for curb and joint details.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAW

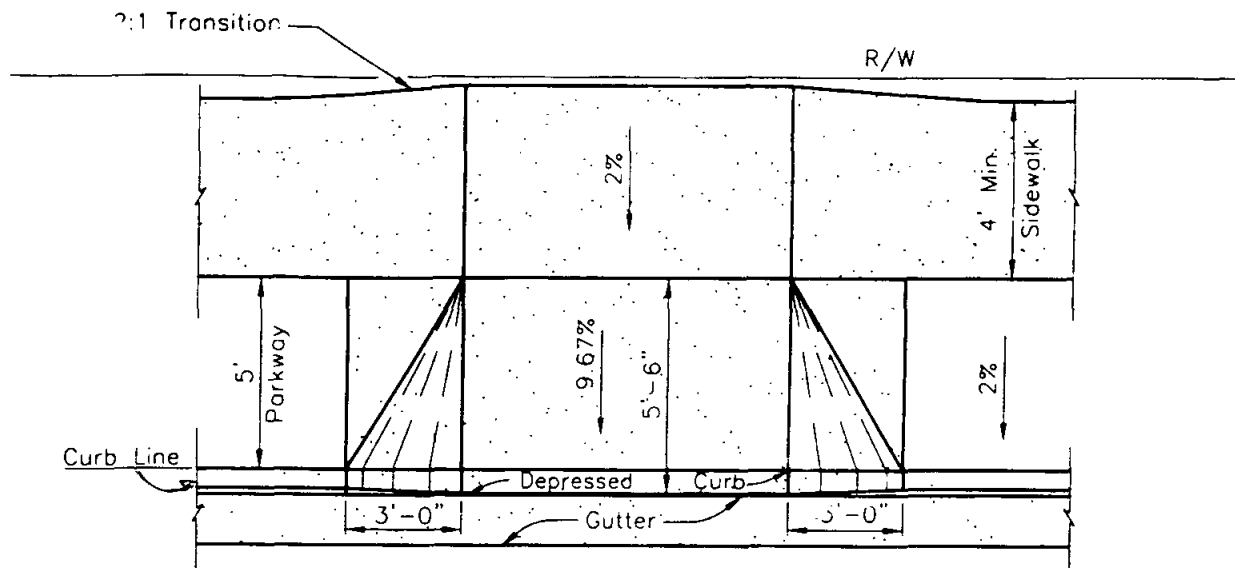
Rafael L. Munoz
Coordinator R.C.E. 2951 Date

CONCRETE DRIVEWAY
(Contiguous Sidewalk)

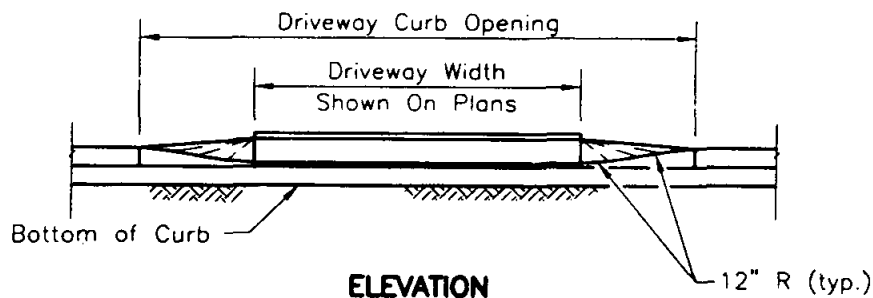
Revision	By	Approved	Date
Modify		OMM	3/97

DRAWING
NUMBER

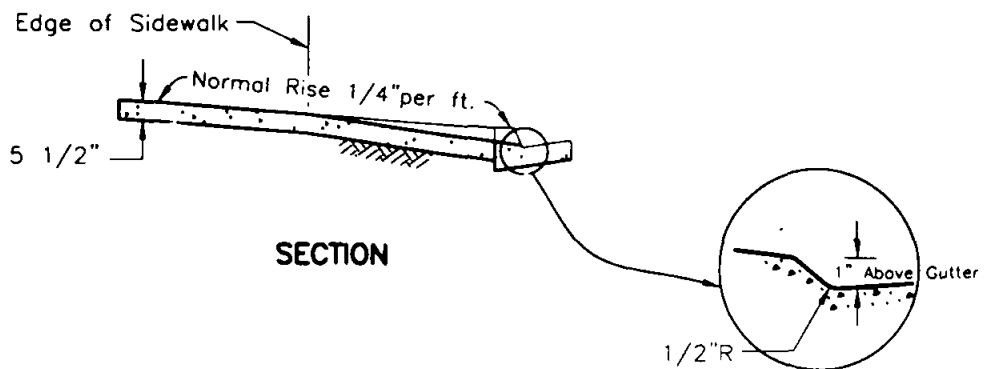
G-14A



PLAN



ELEVATION



SECTION

NOTES

1. No concrete shall be placed until forms and subgrade are inspected by the Agency.
2. Concrete shall be 520-C-2500.
3. See Standard Drawings G-15 and G-16 for width and location requirements
4. Driveway ramp to extend to 10 feet from curb face or to property line whichever is less. (For commercial driveways only)
5. See Standard Drawings G-2 and G-10 for curb and joint details.

Revision	By	Approved	Date
Details		OMM	3/97

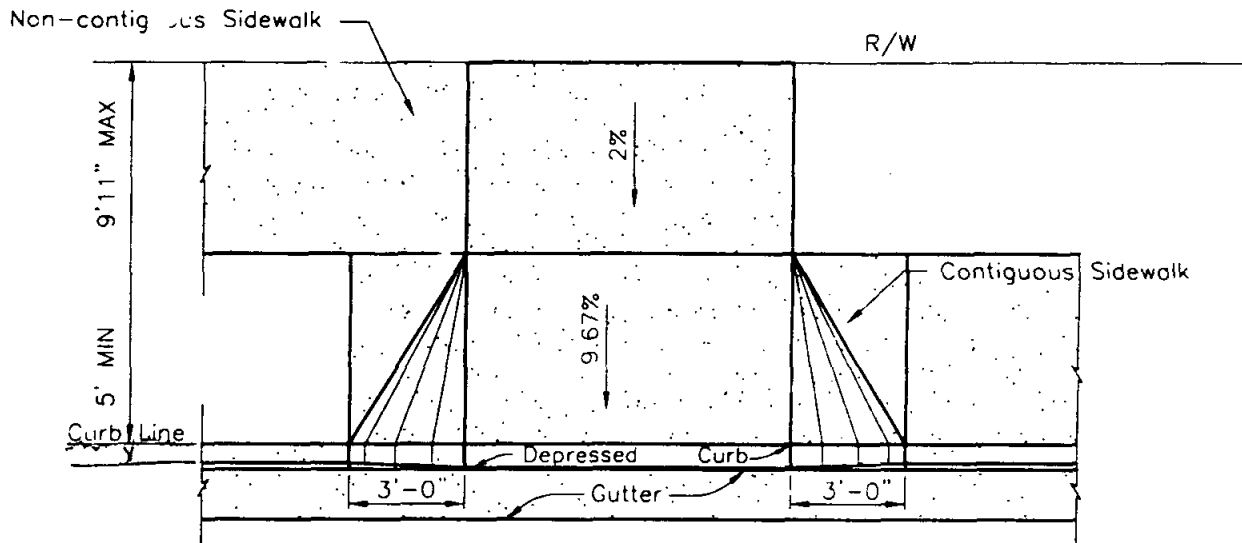
SAN DIEGO REGIONAL STANDARD DRAW

**CONCRETE DRIVEWAYS
(Non-contiguous Sidewalk)**

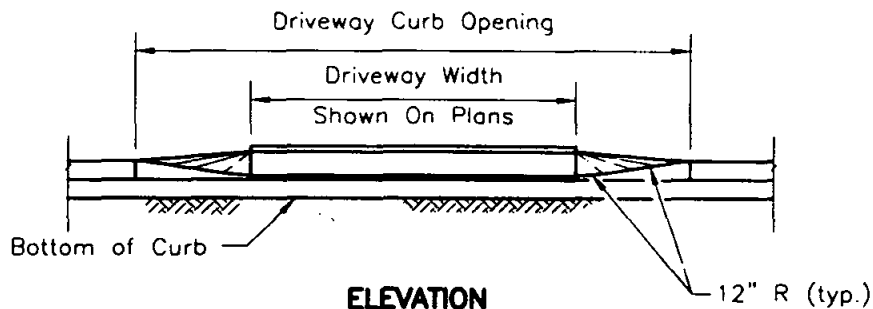
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Rafael J. [Signature]
Coordinator R.C.E. 29513, Date

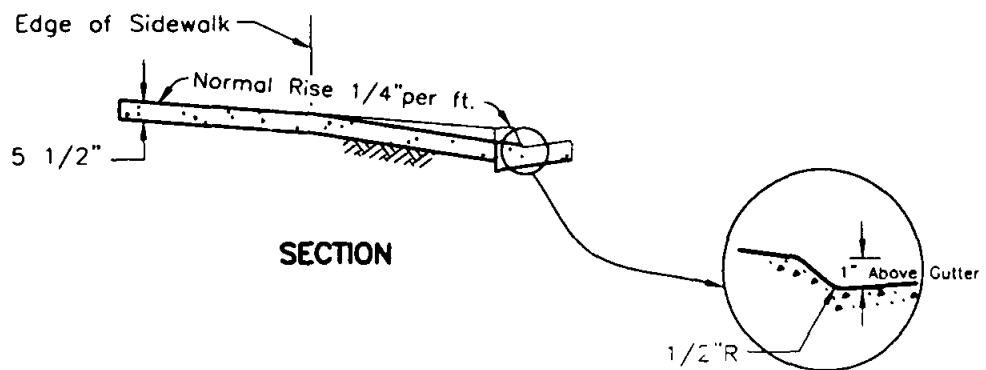
DRAWING
NUMBER **G-14B**



PLAN



ELEVATION



SECTION

NOTES

1. No concrete shall be placed until forms and subgrade are inspected by the Agency.
2. Concrete shall be 520-C-2500.
3. See Standard Drawings G-15 and G-16 for width and location requirements
4. Driveway ramp to extend to 10 feet from curb face or to property line whichever is less. (For commercial driveways only)
5. See Standard Drawings G-2 and G-10 for curb and joint details.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAW

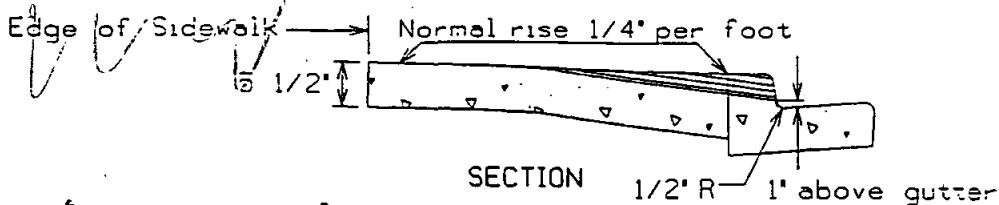
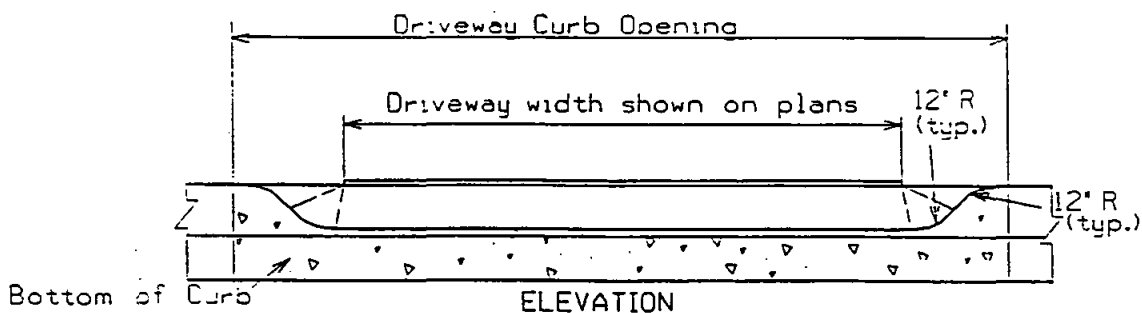
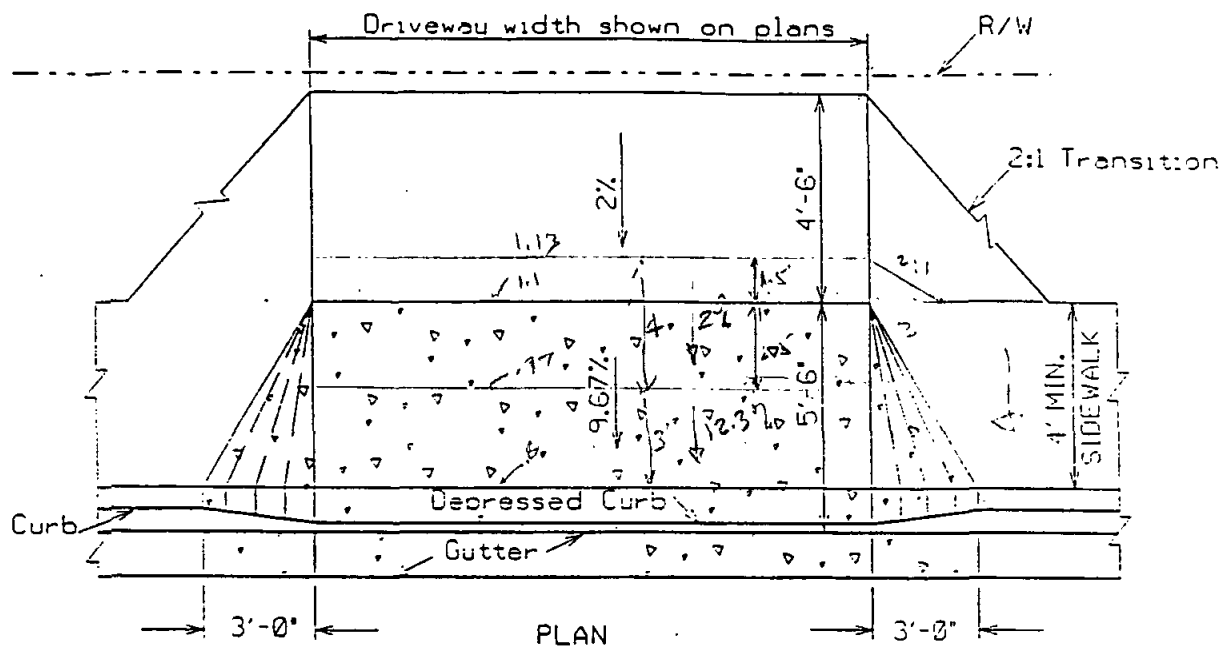
Revision	By	Approved	Date
Modify		OMM	3/97

Rafael Dominguez 4/24/97
Coordinator R.C.E. 29513 Date

DRAWING
NUMBER

G-14C

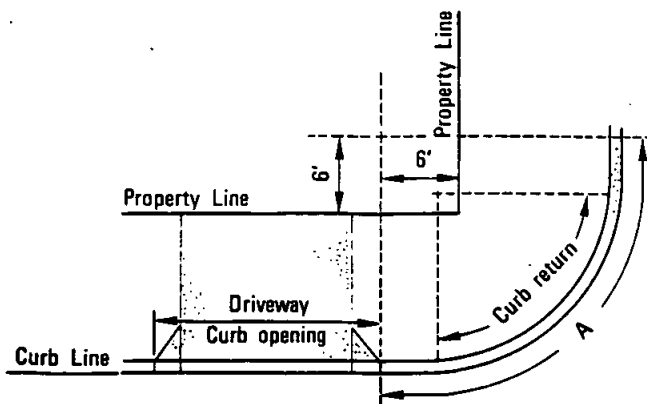
RESIDENTIAL
CONCRETE DRIVEWAY
(PARKWAY LESS THAN 10' IN DEPTH)



NOTES:

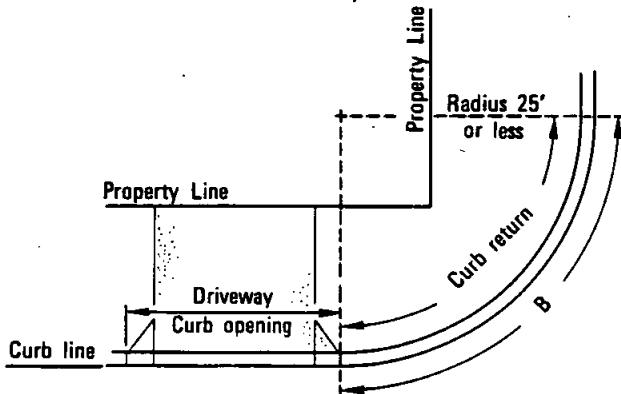
1. Concrete shall not be placed until forms and subgrade are inspected and approved by Engineer.
2. Concrete shall be 520-C-2500.
3. See Standard Drawing G-15 and G-16 for width and location requirements.
4. Driveway ramp to extend to 10 feet from curb face or to property line, whichever is less.
5. See Standard Drawing G-2 and G-10 for curb and joint details.

Revision	By	Approved	Date	SAN DIEGO REGIONAL - STANDARD DRAWING	DWG. NO.
DRAWING	OGB		7-95	CONCRETE DRIVEWAY (Contiguous Sidewalk)	G-14A



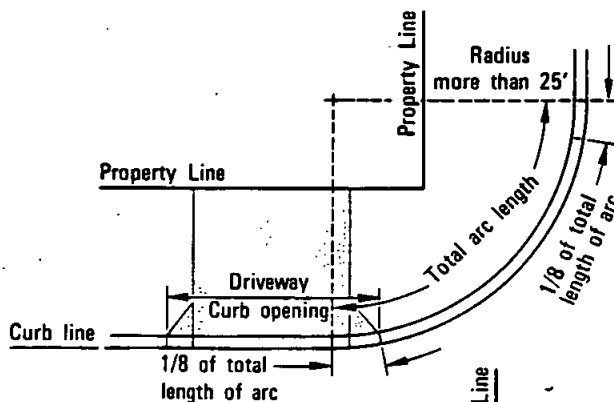
REQUIREMENT 1

No portion of any curb opening shall be permitted within 6' of the intersection of the prolonged property lines and the curb as shown by arc A.



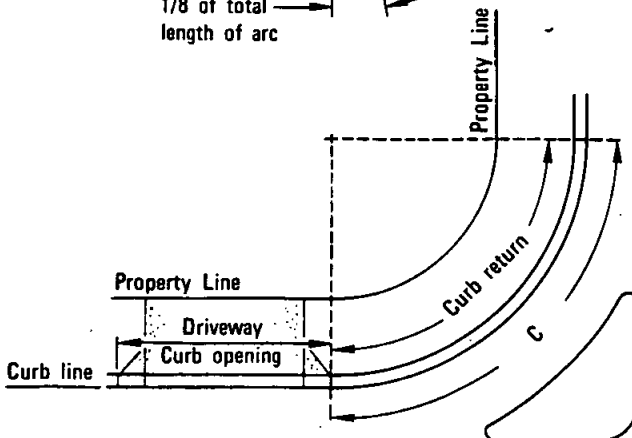
REQUIREMENT 2

No portion of any curb opening shall be permitted in the curb return where the radius of curb is 25' or less, as shown by arc B.



REQUIREMENT 3

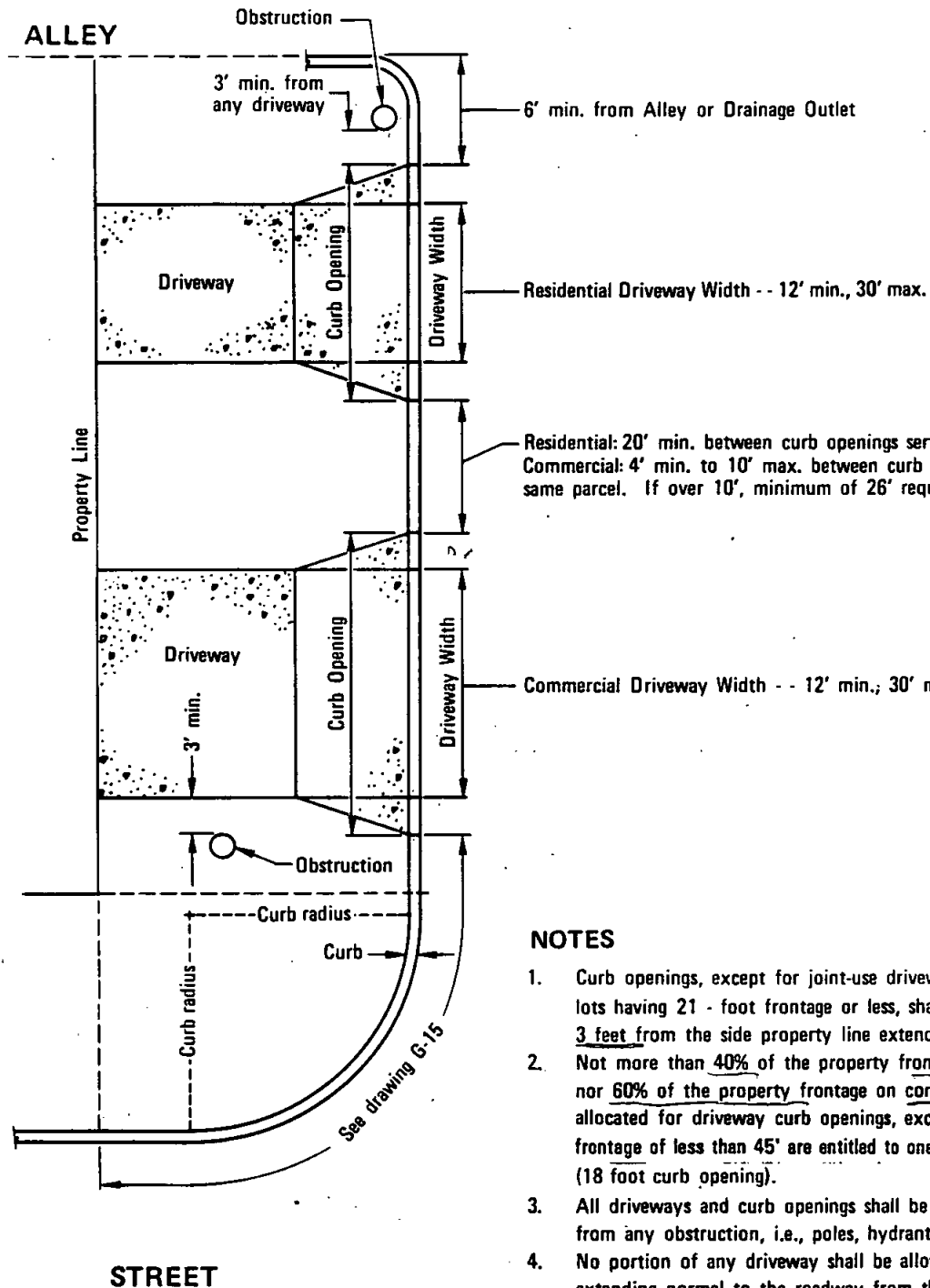
On all curb returns where the radius is more than 25', curb openings may encroach upon each end of the return a distance equal to 12 1/2% or 1/8 of the total length of the arc on the curb return, thus leaving at least 75% of the length of arc on the return face free from driveway encroachment, provided Requirement 1 is met.



REQUIREMENT 4

No portion of any curb opening shall be permitted in the curb return where a separate turning movement is provided, as shown by arc C

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Reqmt. 3	AC	M.B.	5-86		
				DRIVEWAY LOCATION - ADJACENT TO CURB RETURNS AND STREET LINES	<div>Alfred A. Kuehn Coordinator R.C.E. 19807</div> <div>Dec. 1975 Date</div>
				DRAWING NUMBER	G-15



NOTES

1. Curb openings, except for joint-use driveways and drive ways on lots having 21 - foot frontage or less, shall be located at least 3 feet from the side property line extended.
2. Not more than 40% of the property frontage on residential lots, nor 60% of the property frontage on commercial lots may be allocated for driveway curb openings, except that lots having frontage of less than 45' are entitled to one 12' driveway (18 foot curb opening).
3. All driveways and curb openings shall be a minimum of 3 feet from any obstruction, i.e., poles, hydrants, etc.
4. No portion of any driveway shall be allowed across a line extending normal to the roadway from the front corner of the property, except that joint-use driveways may be permitted in special instances where written approval of both property owners is filed with the Agency.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

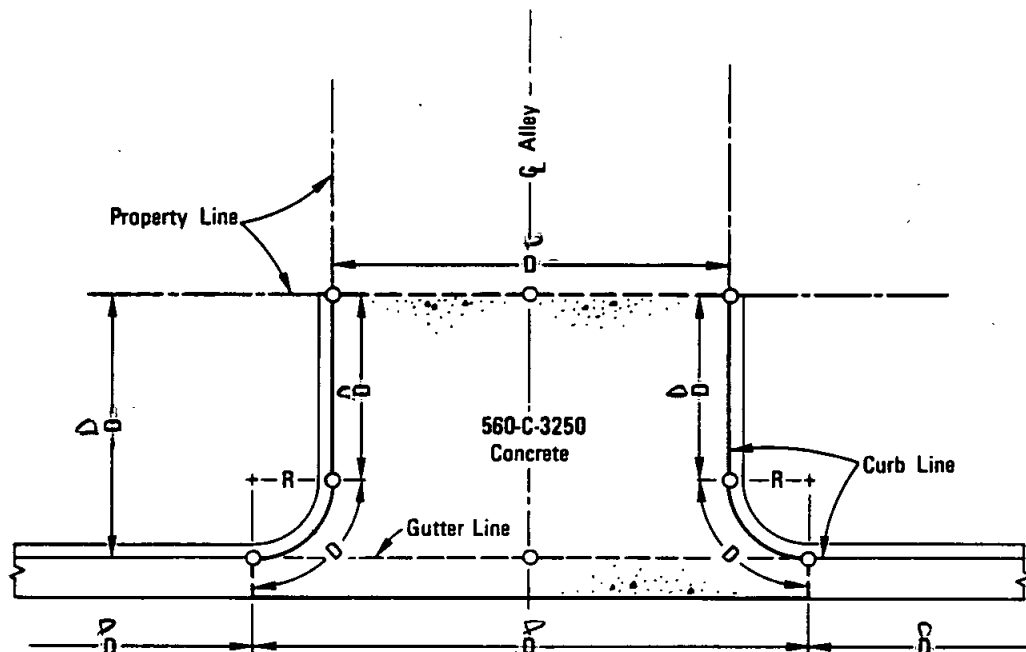
DRAWING
NUMBER

G-16

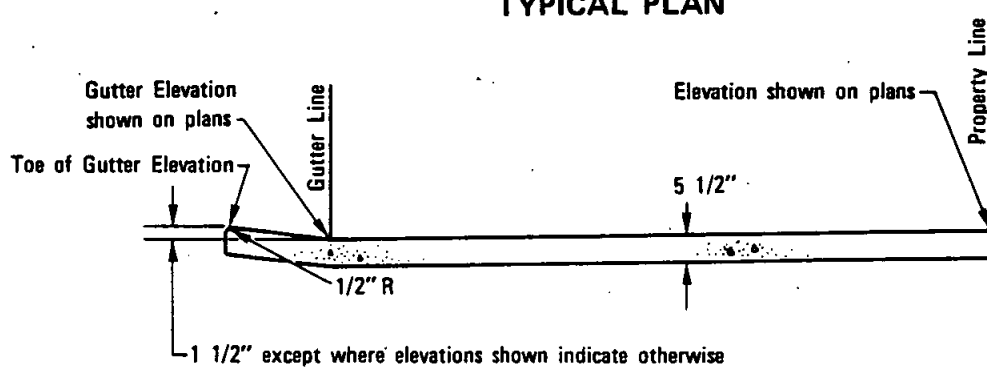
SAN DIEGO REGIONAL STANDARD DRAWING

DRIVEWAY LOCATION AND WIDTH REQUIREMENTS

Revision	By	Approved	Date
Note 2	JP	<i>[Signature]</i>	5-92



TYPICAL PLAN



SECTION

NOTES

1. Sidewalk ramps shall be installed as required by Agency.
2. D = distance shown on plans.
3. R = radius shown on plans (3 ft. minimum).
4. O = elevations shown on plans (top of curb, and gutter elev).
5. --- = 1/2" expansion joints.

LEGEND ON PLANS



Revision	By	Approved	Date
Thickness	IC	D.S.	7-79
Conc.	IC	M.B.	5-86
Note 5	IC	G.H.	7-88

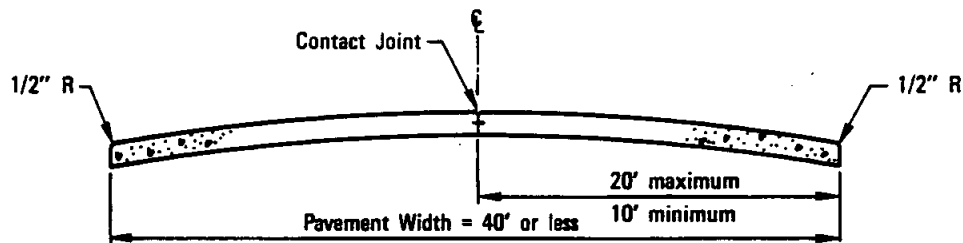
SAN DIEGO REGIONAL STANDARD DRAWING

ALLEY APRON

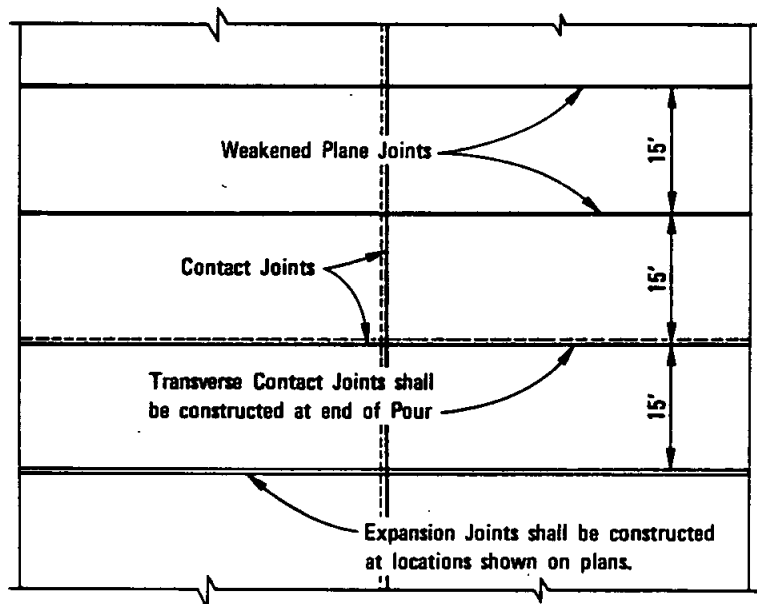
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allard A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER G-17



TYPICAL SECTION



TYPICAL PLAN

NOTES

1. Concrete shall be 560-C-3250.
2. See Standard Drawing G-10 for joint details.
3. Adjust 15' interval between Transverse Joints to match adjacent existing improvements.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

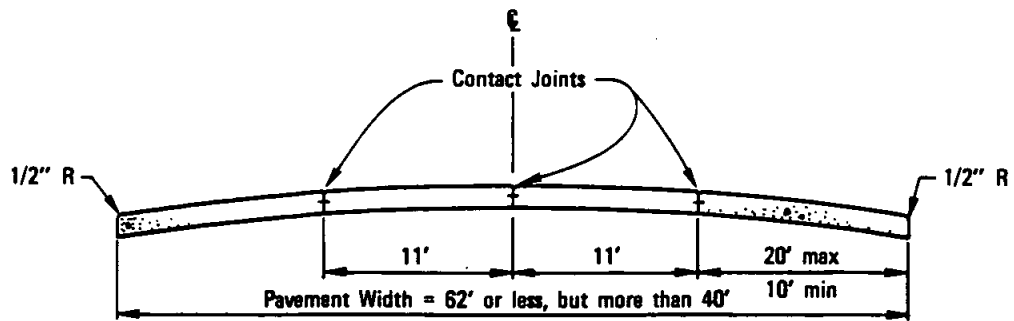
Allen P. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER G-18**

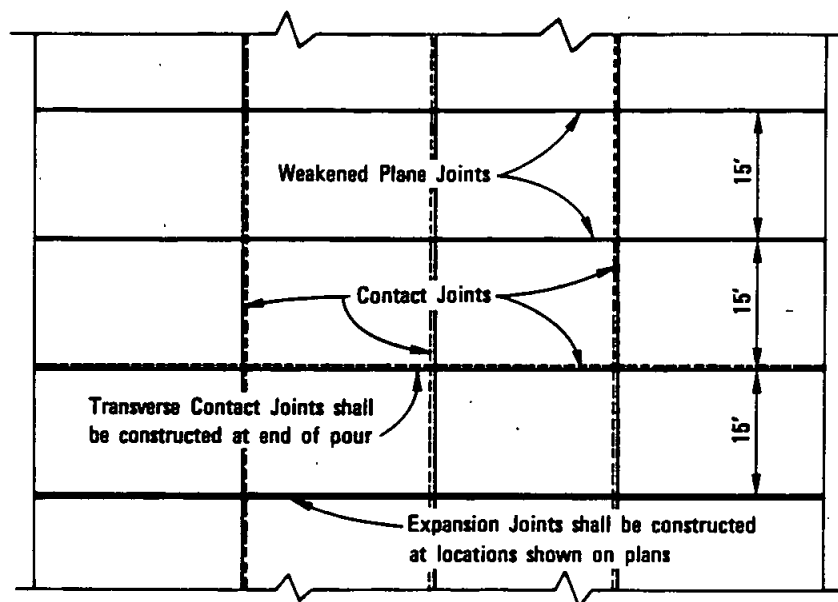
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE PAVEMENT,
WIDTH 40' OR LESS**

Revision	By	Approved	Date
Conc.	<i>RC</i>	<i>M.B.</i>	<i>5-86</i>



TYPICAL SECTION

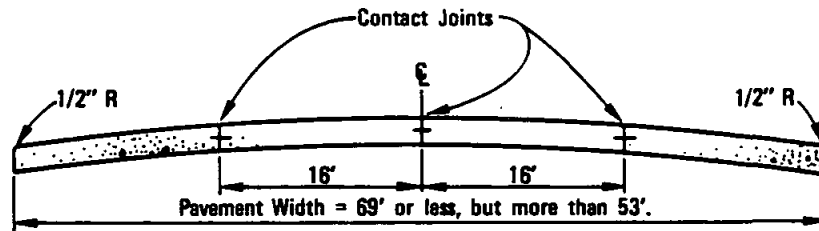


TYPICAL PLAN

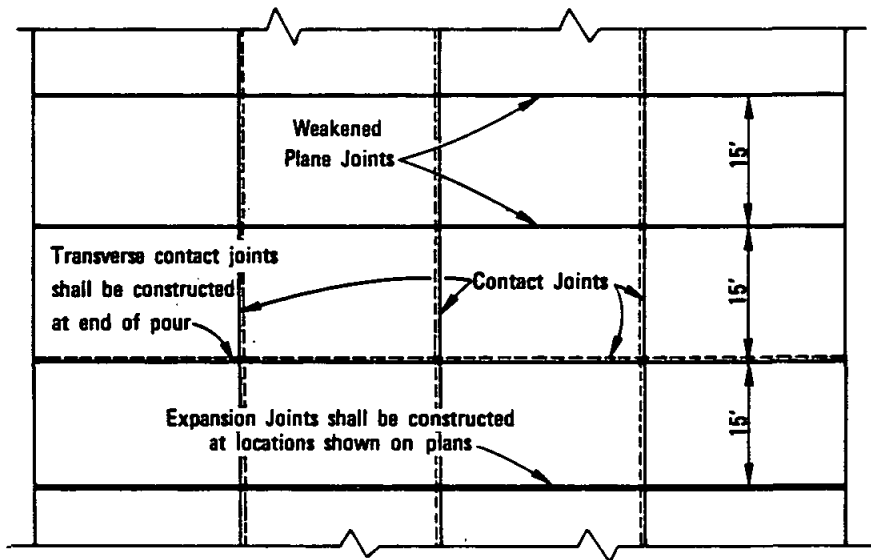
NOTES

1. Concrete shall be 560-C-3250.
2. See Standard Drawing G-10 for joint details.
3. Adjust 15' interval between Transverse Joints to match adjacent existing improvements.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Conc.	R	M.A.	5-84			<i>Allan G. Kuehn</i>	<i>Dec. 1975</i>
				CONCRETE PAVEMENT WIDTH 40' TO 62'		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER	G-19



TYPICAL SECTION



TYPICAL PLAN

NOTES

1. Concrete shall be 560-C-3250.
2. See Standard Drawing G-10 for Joint Details.
3. Adjust 15' interval between Transverse Joints to match adjacent existing improvements.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen G. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

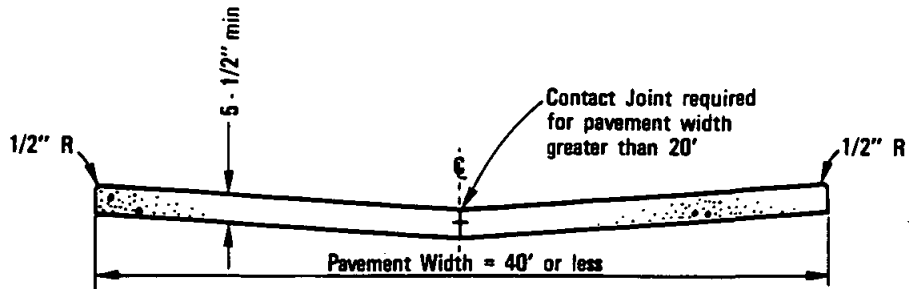
**DRAWING
NUMBER**

G-20

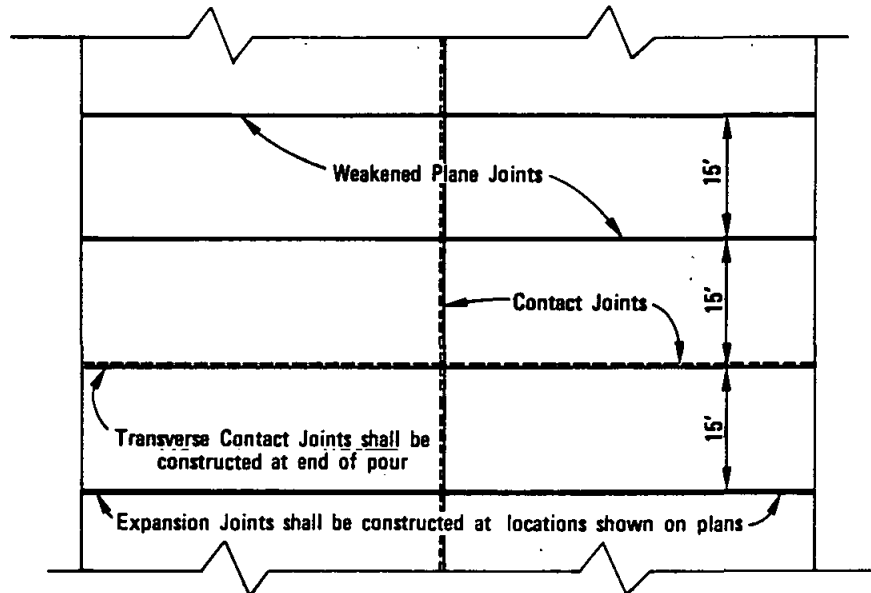
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE PAVEMENT
WIDTH 53' TO 69'**

Revision	By	Approved	Date
Conc.	<i>JS</i>	<i>M.B.</i>	<i>5/86</i>



TYPICAL SECTION

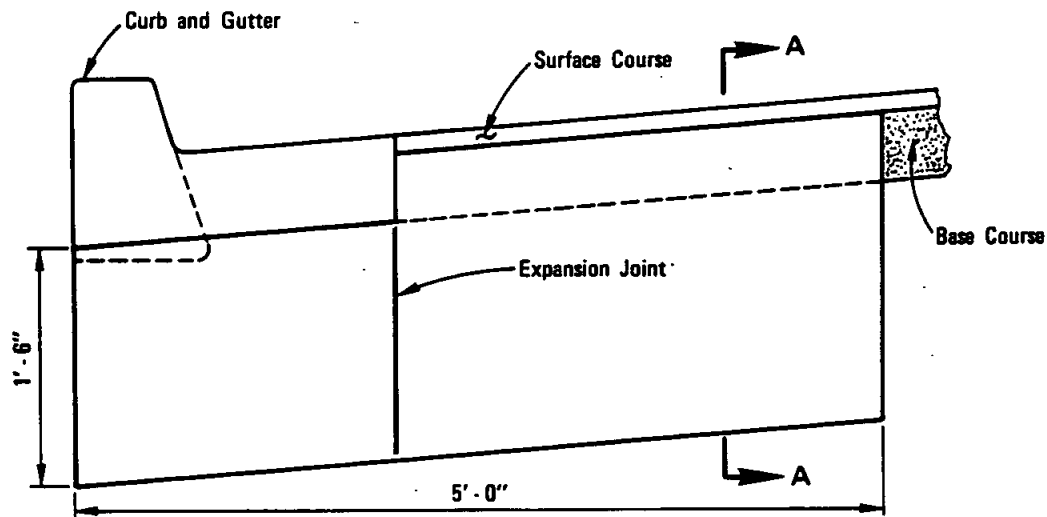


TYPICAL PLAN

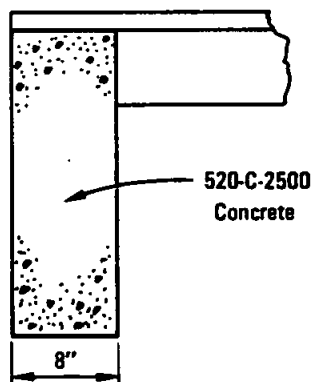
NOTES

1. Concrete shall be 560-C-3250
2. See Standard Drawing G-10 for joint details.
3. Adjust 15' interval between Transverse Joints to match adjacent existing improvements.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Conc.	R. M. B.		5-8-75				
				CONCRETE PAVEMENT, ALLEY SECTION, WIDTH 40' OR LESS		<i>Allen A. Kuehn</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER	G-21

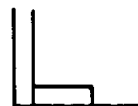


ELEVATION



SECTION A-A

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen S. Keshner Dec. 1975
Coordinator R.C.E. 19807 Date

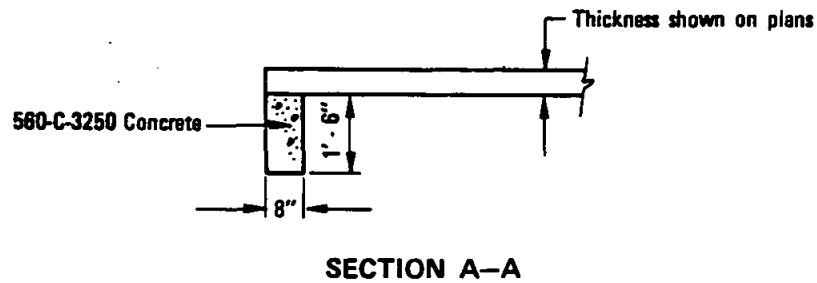
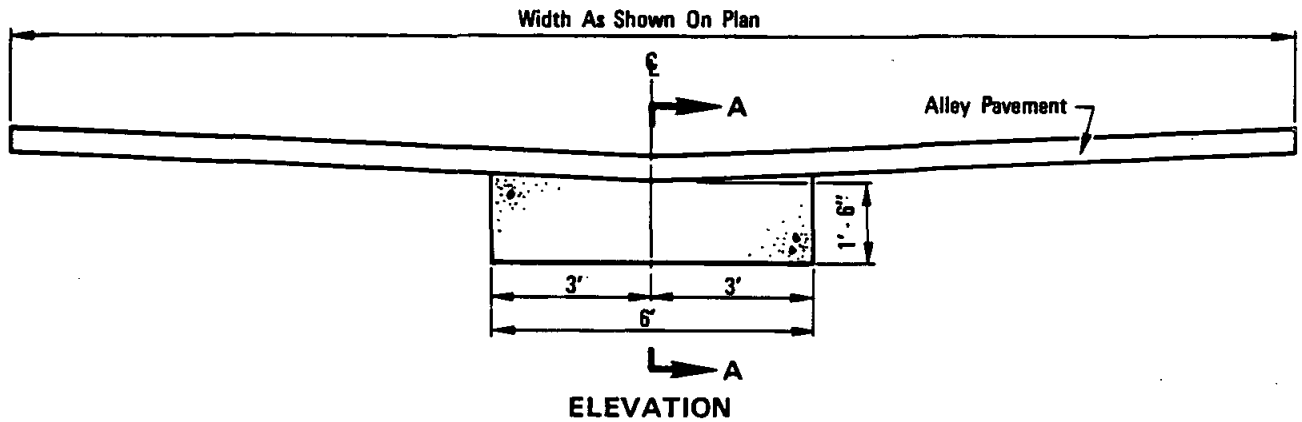
DRAWING
NUMBER

G-22

SAN DIEGO REGIONAL STANDARD DRAWING

CUTOFF WALL AT END
OF PAVEMENT

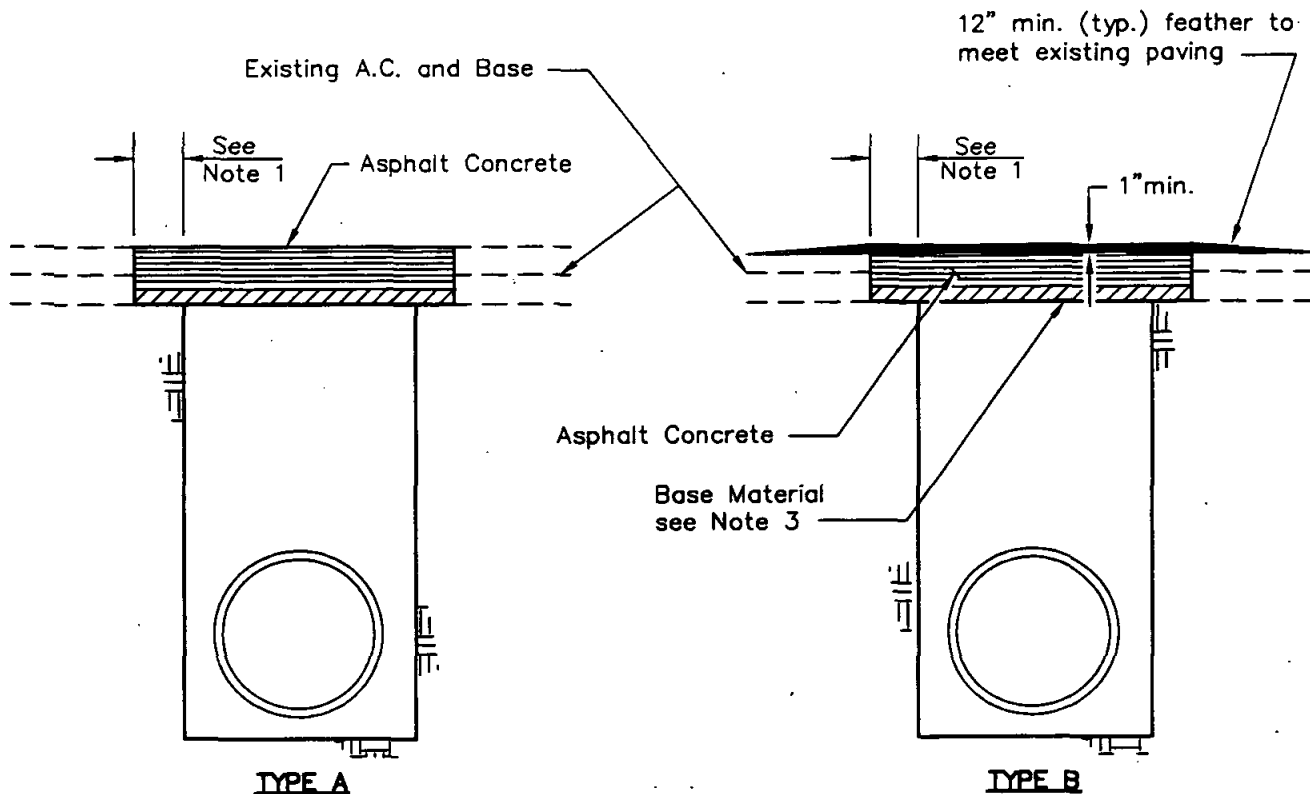
Revision	By	Approved	Date
Conc.	R	M.B.	5-86



LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Conc.	3	M.B.	5-86				
				CUTOFF WALL AT END OF ALLEY PAVEMENT		<i>Alfred A. Kuehnel</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER G-23	



NOTES

1. Trench edges to be cut a minimum of 6" wider than trench for trenches 3' wide or less, and 12" wider for trenches over 3' wide.
2. Existing A.C. shall be cut and removed in such a manner so as not to tear, bulge or displace adjacent pavement. Edges shall be clean and vertical. All cuts shall be parallel or perpendicular to street centerline, when practical.
3. Base material shall be replaced to depth of existing base. A.C. may be substituted for base material.
4. A tack coat of asphaltic emulsion or paving asphalt shall be applied to existing A.C. at all contact surfaces, prior to resurfacing.
5. Asphalt Concrete Resurfacing:
 - a) Minimum total thickness shall be one inch greater than existing A.C.
 - b) A.C. shall be hot plant mix.
 - c) Finish course for Type B resurfacing shall be laid down using a spreader box.
6. All A.C. resurfacing shall be seal coated with an emulsified asphalt and covered with sand. Chip sealing shall be applied as required by Agency.
7. Type B shall not be used on lateral crossings.
8. Sloughing of trench under pavement shall be cause for requiring additional pavement and base.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARD DRAWING COMMITTEE

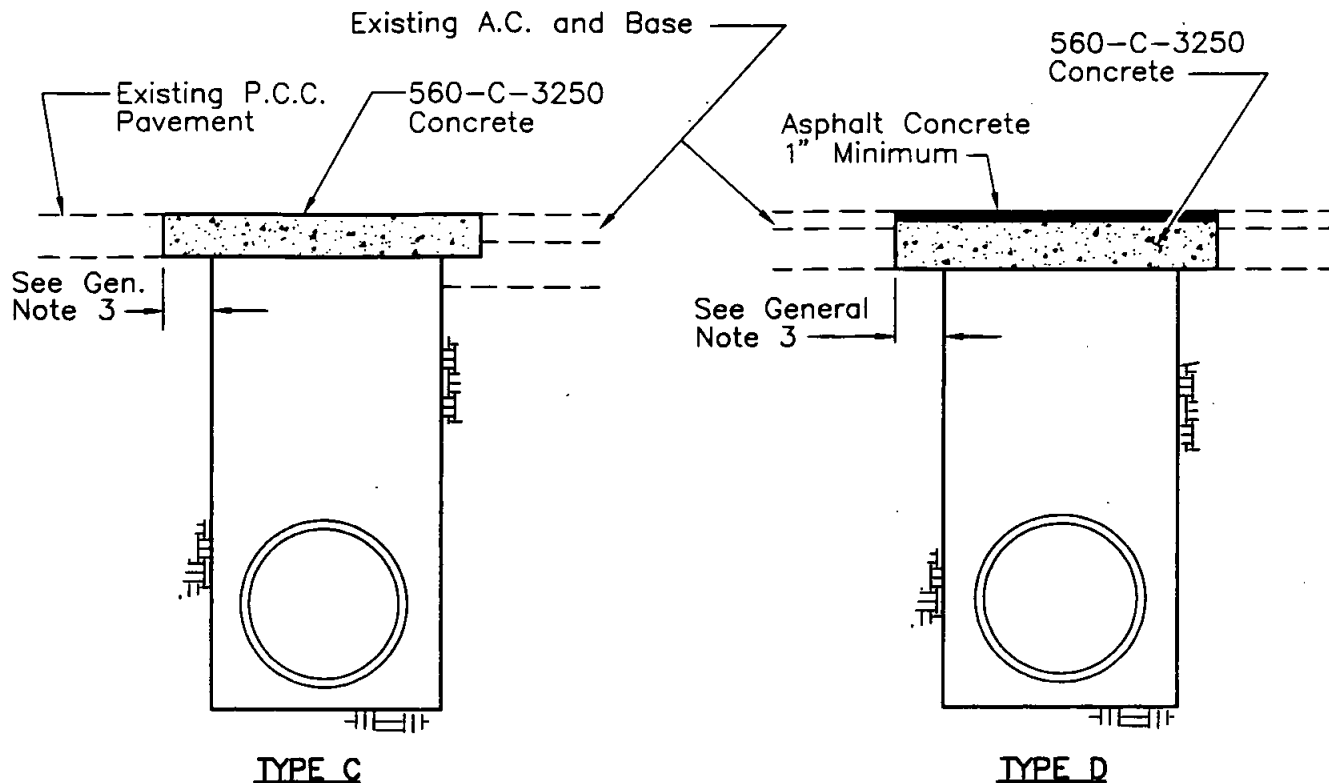
Handwritten signature 2-95
Chairman R.C.E. 25902 Date

SAN DIEGO REGIONAL STANDARD DRAWING

TRENCH RESURFACING TYPES A & B

DRAWING
NUMBER G-24

Revision	By	Approved	Date
Notes	04	RJA	3/95



GENERAL NOTES

- Existing A.C. shall be cut and removed in such a manner so as not to tear, bulge or displace adjacent pavement. Edges shall be clean and vertical. All cuts shall be parallel or perpendicular to street centerline, when practical.
- Sloughing of trench under pavement shall be cause for requiring additional pavement and base.
- Trench edges shall be cut a minimum of 6" wider than trench for trenches 3' wide or less; and 12" wider for trenches over 3' wide.

NOTES TYPE-C

- Concrete shall be colored black where required to match existing pavement, method to be specified by Agency.
- Minimum concrete thickness:
 Alleys and local residential street -----5 inches
 Major streets and highway -----7 inches
 Trench resurfacing in P.C.C. pavement shall have the above minimum thickness or match the existing concrete thickness plus one inch, whichever is greater.

NOTES TYPE-D

- A.C. shall be hot plant mix.
- A tack coat of asphaltic emulsion or paving asphalt shall be applied to the existing A.C. at all contact surfaces and to portland cement concrete prior to placing new A.C.
- A.C. resurfacing shall be seal coated with an emulsified asphalt and covered with sand. Chip sealing shall be applied as required by Agency.

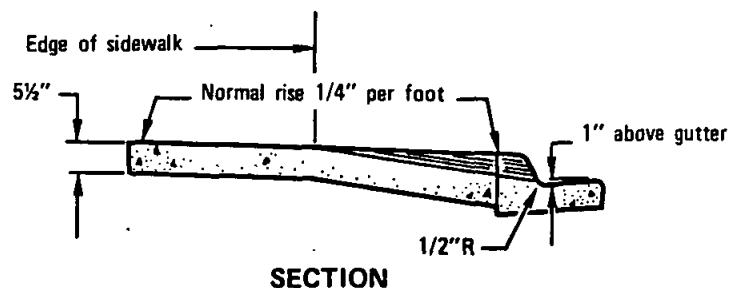
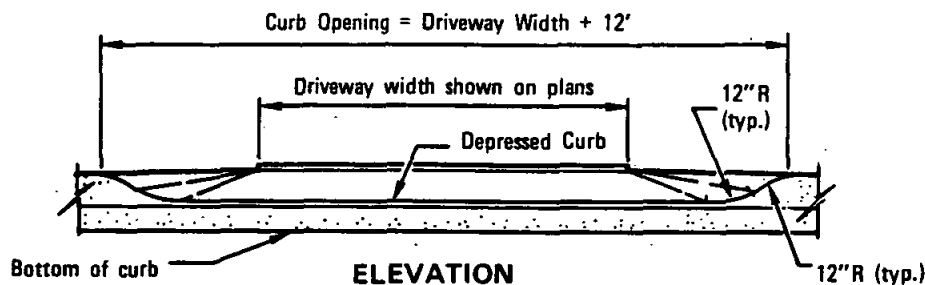
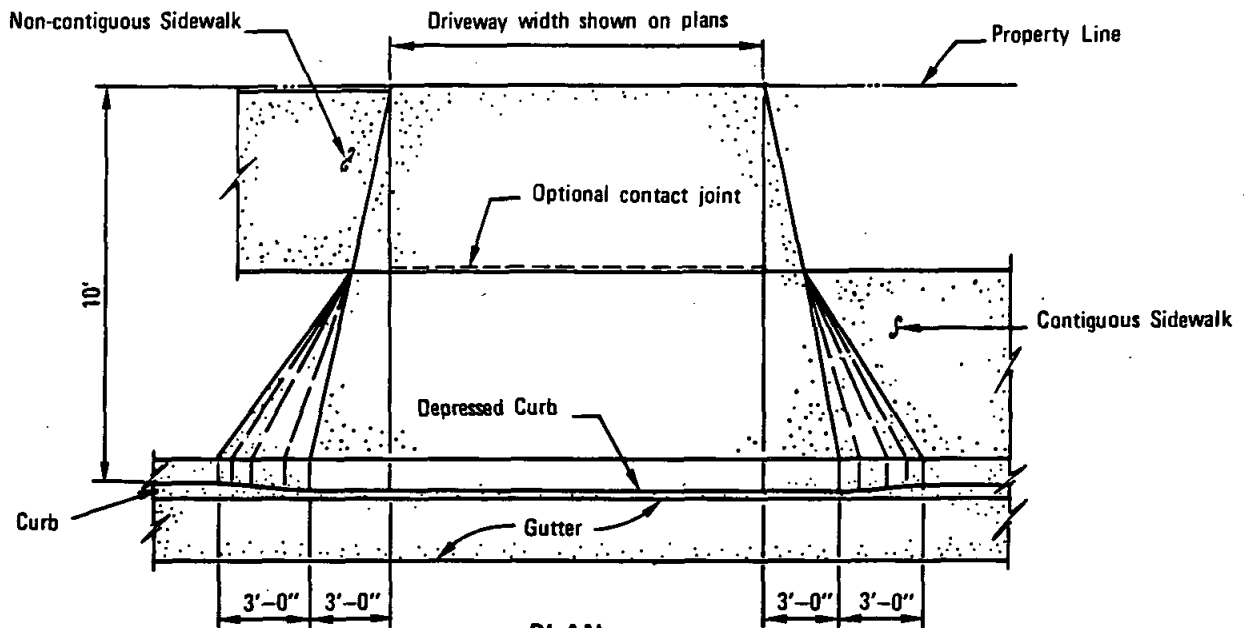
Revision	By	Approved	Date
NOTES	on	RLM	2/95

SAN DIEGO REGIONAL STANDARD DRAWING

TRENCH RESURFACING
TYPES C & D

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
[Signature] 2-95
Chairman R.C.E. 25902 Date

DRAWING
NUMBER G-25



NOTES

1. No concrete shall be placed until forms and subgrade are inspected by the Agency.
2. Concrete shall be 520-C-2500.
3. See Standard Drawing G-15 and G-16 for width and location requirements.
4. See Standard Drawings G-2 and G-10 for curb and joint details.

LEGEND ON PLANS



Alt. Commercial Driveway

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Harry R. Holt Oct 1982
Chairman A.C.E. C13768 Date

SAN DIEGO REGIONAL STANDARD DRAWING

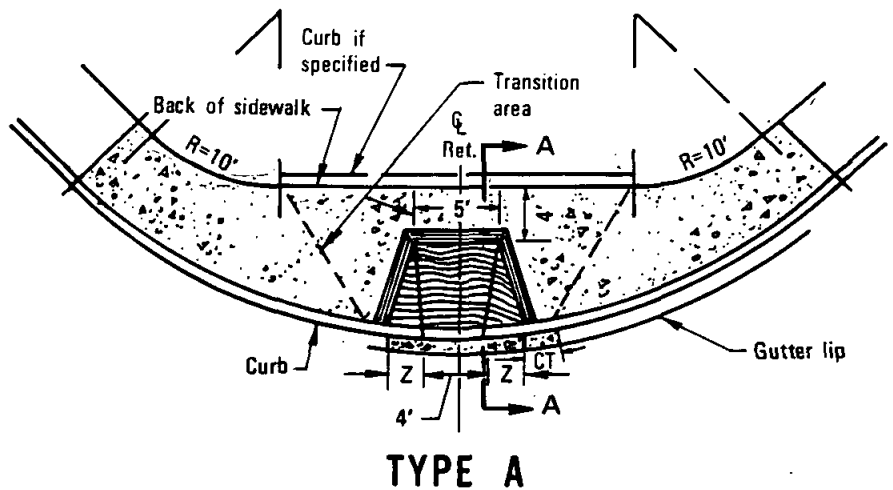
CONCRETE DRIVEWAY COMMERCIAL ALTERNATE

Revision	By	Approved	Date
Conc.	<i>SC</i>	<i>M.B.</i>	5-86
Note 4	<i>SC</i>	<i>D.H.</i>	7-88

DRAWING
NUMBER

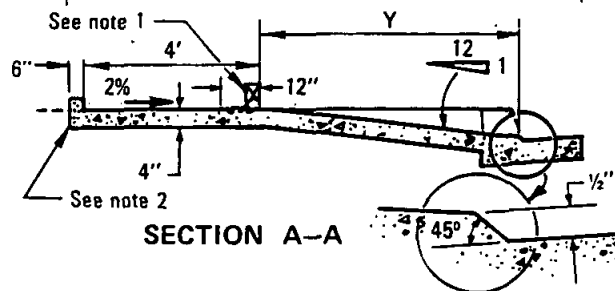
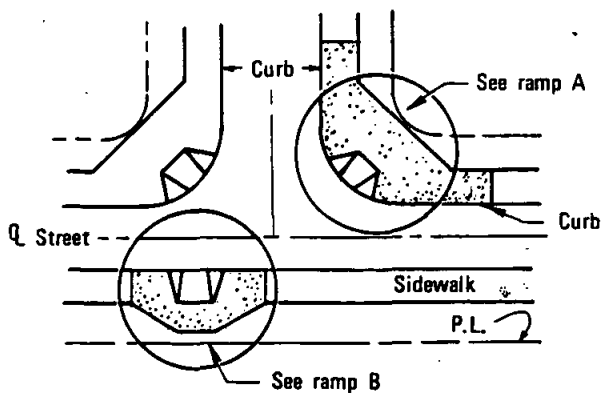
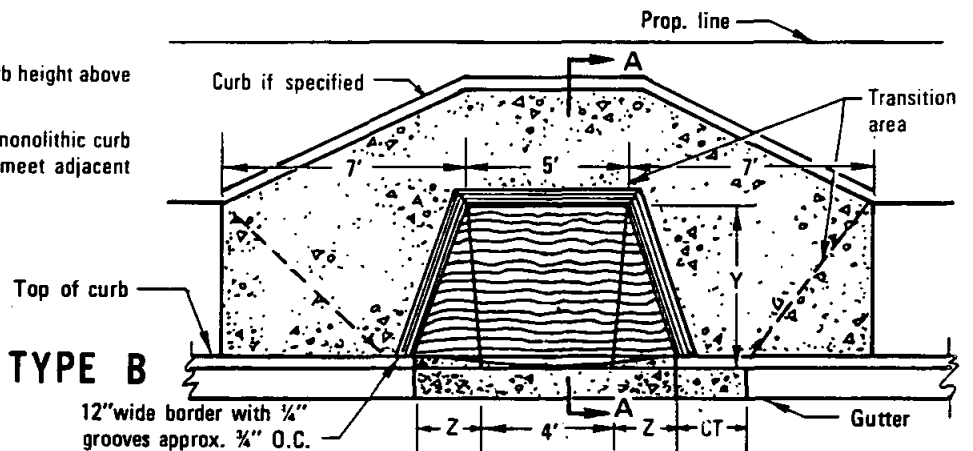
G-26

X	Y	Z	CT
Curb Height	Ramp Length	Side Slope	Curb Transition
1"	0' - 6"	1' - 6"	0' - 0"
2"	1' - 6"	1' - 6"	0' - 0"
3"	2' - 6"	1' - 8"	0' - 0"
4"	3' - 6"	2' - 4"	0' - 0"
5"	4' - 6"	3' - 0"	0' - 0"
6"	5' - 6"	3' - 0"	0' - 0"
7"	5' - 6"	3' - 0"	1' - 0"
8"	5' - 6"	3' - 0"	2' - 0"



CONSTRUCTION NOTES

1. Set false header for back of ramp at curb height above gutter grade to maximum 6".
2. Where shown on the plans, construct monolithic curb for retention of street drainage or to meet adjacent improvements.



NOTE

See Standard Drawing G-32 for general notes.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Notes	✓	A.H.	9/88			
				PEDESTRIAN RAMP TYPES A AND B (NEW CONSTRUCTION)		4-25-86 Coordinator R.C.E. C21133 Date
						DRAWING NUMBER G-27

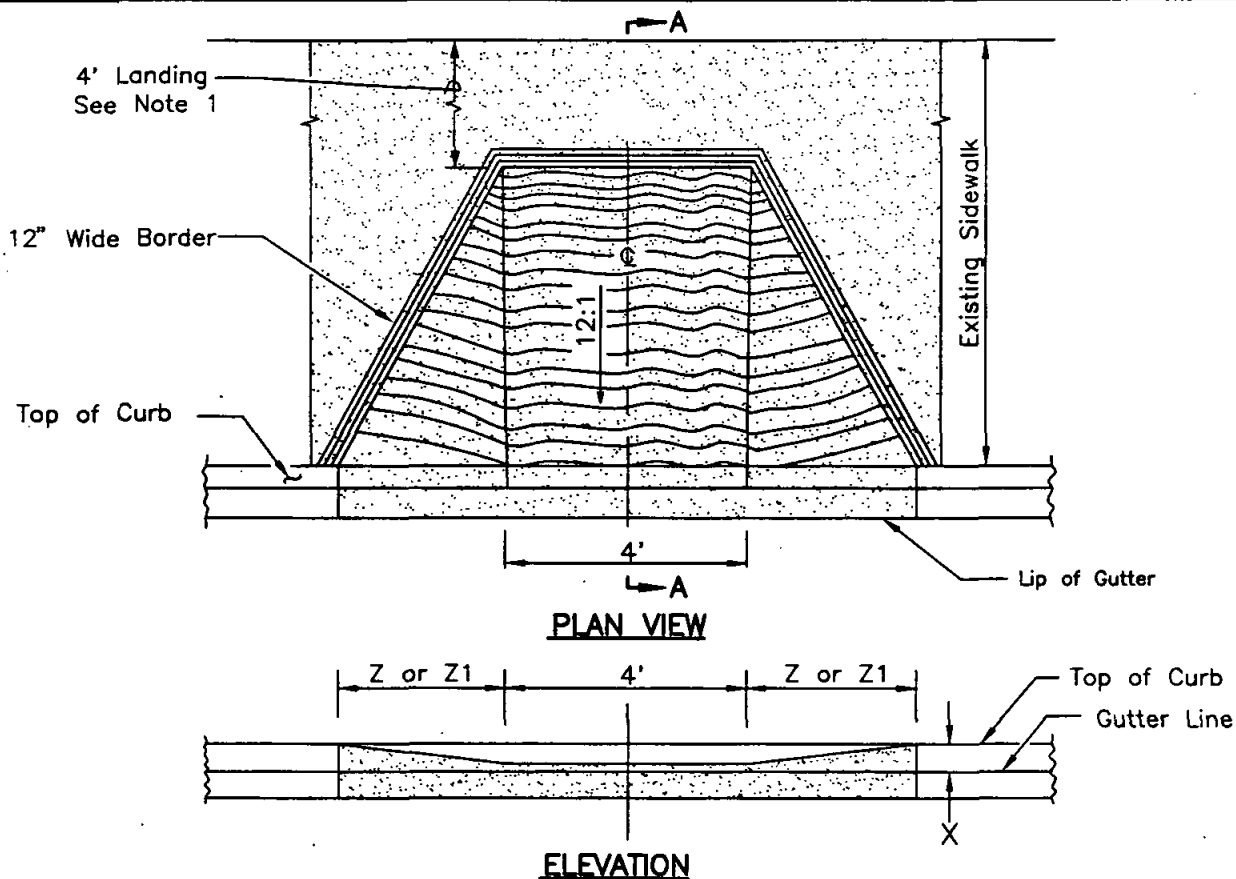


TABLE A			
X	Y	Z	Z1
CURB HEIGHT	RAMP LENGTH (12:1)	SIDE SLOPE (8:1)	SIDE SLOPE (12:1)
1"	0'-6"	1'-6"	1'-6"
2"	1'-6"	1'-6"	1'-6"
3"	2'-6"	1'-8"	2'-6"
4"	3'-6"	2'-4"	3'-6"
5"	4'-6"	3'-0"	4'-6"
6"	5'-6"	3'-8"	5'-6"
7"	6'-6"	4'-4"	6'-6"
8"	7'-6"	5'-0"	7'-6"

NOTES

1. If inadequate R/W exists to provide 4' landing, side slopes shall be increased to 12:1 per side slope "Z1" in Table A. Landing shall be 3' minimum in all other cases.
2. See Standard Drawing G-32 for general notes.
3. Type A-1 is a designation for ramp at curb return.
4. Type B-1 is a designation for ramp at straight curb.

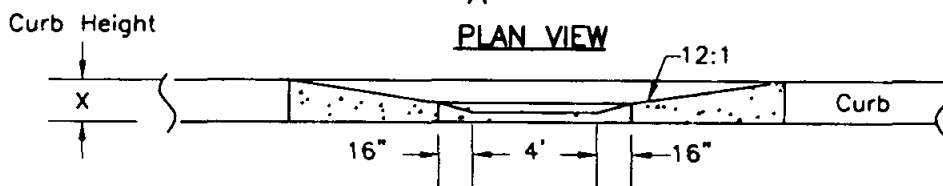
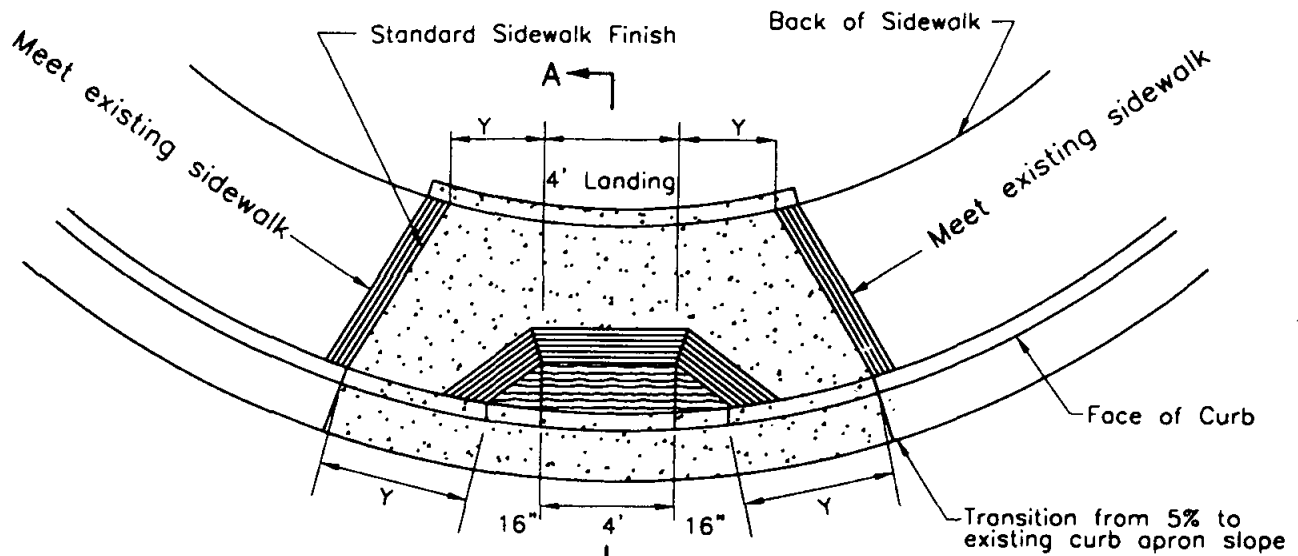
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARD DRAWING COMMITTEE
Chairman R.C.E. 25902 Date *2-75*

SAN DIEGO REGIONAL STANDARD DRAWING

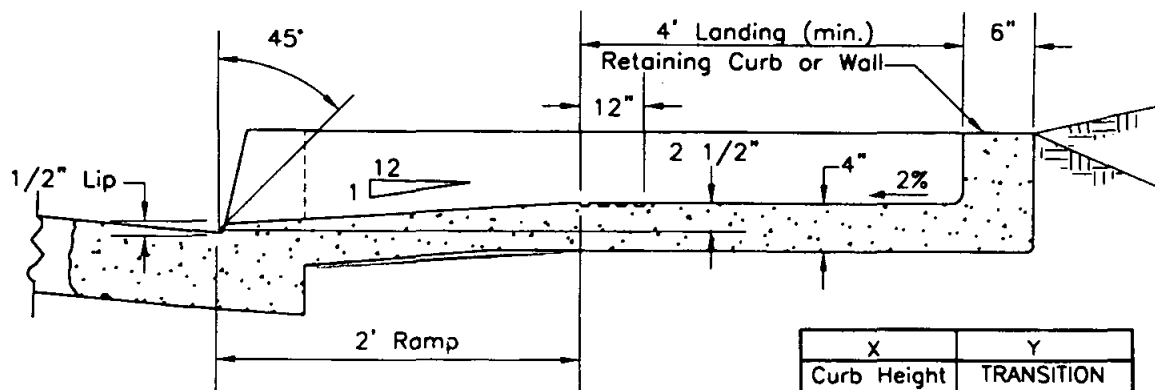
PEDESTRIAN RAMP TYPES A-1 AND B-1 (For Existing Sidewalk)

Revision	By	Approved	Date
ADA Rgmt	0*	RLM	7/96

DRAWING
NUMBER G-28



ELEVATION



SECTION A-A

NOTES:

1. Type C ramps are only to be used to mitigate existing conditions where inadequate right of way exists to use Standard Drawing G-28, or G-30 and are not to be used in new construction.
2. See Standard Drawing G-32 for general notes.

X	Y
Curb Height	TRANSITION
4"	1' - 6"
5"	2' - 6"
6"	3' - 6"
7"	4' - 6"
8"	5' - 6"
9"	6' - 6"
10"	7' - 6"
11"	8' - 6"
12"	9' - 6"
13"	10' - 6"

Revision	By	Approved	Date
Y-Dimen	NL	RLM	1/97

SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTRIAN RAMP - TYPE C
(For Existing Sidewalk)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Kepner L. Tolman 5/1/97
Coordinator R.C.E. 29513 Date
DRAWING
NUMBER **G-29**

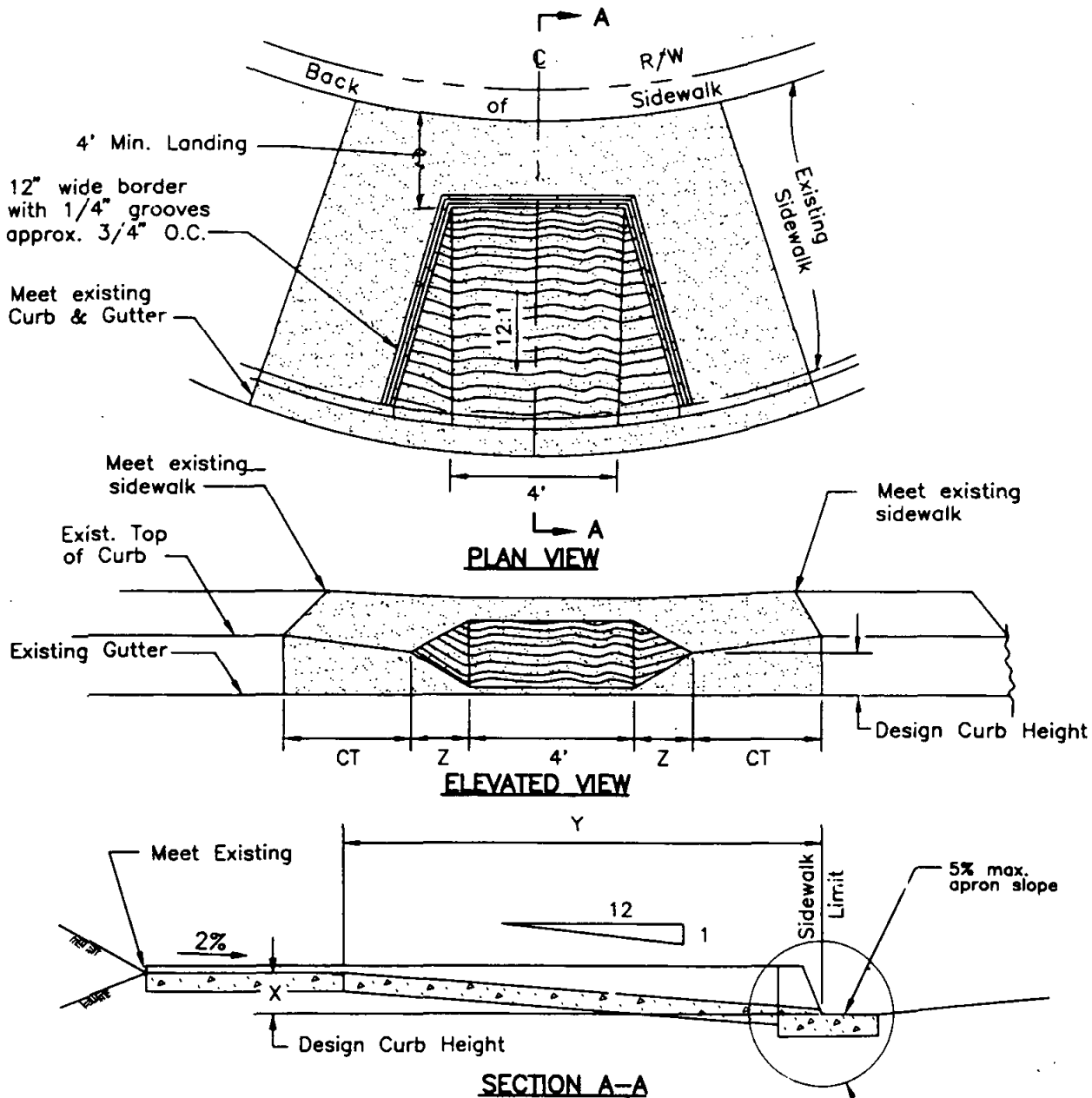


TABLE A			
X	Y	Z	CT
DESIGN CURB HEIGHT	RAMP LENGTH (12:1)	SIDE SLOPE (8:1)	CURB TRANS.
1"	0'-6"	1'-6"	(SEE NOTE NO. 3)
2"	1'-6"	1'-6"	
3"	2'-6"	1'-8"	
4"	3'-6"	2'-4"	
5"	4'-6"	3'-0"	
6"	5'-6"	3'-8"	
7"	6'-6"	4'-4"	
8"	7'-6"	5'-0"	

NOTES

1. See Standard Drawing G-32 for general notes.
2. X = Design Curb Height as shown on plans.
3. Curb transition (CT) shall be 1'-0" for each one inch difference between existing curb height and design curb height.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

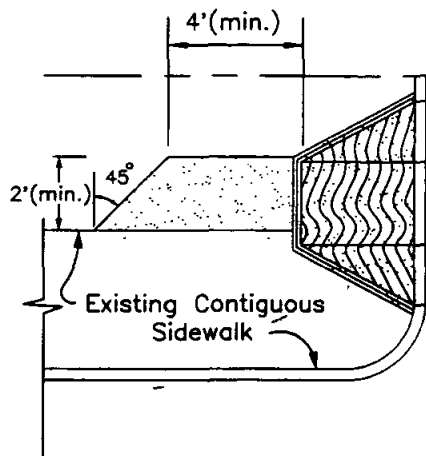
Ray P. Baker 2-95
Chairman R.C.E. 25902 Date

DRAWING
NUMBER G-30

SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTRIAN RAMP
TYPE C-1
(For Existing Sidewalk)

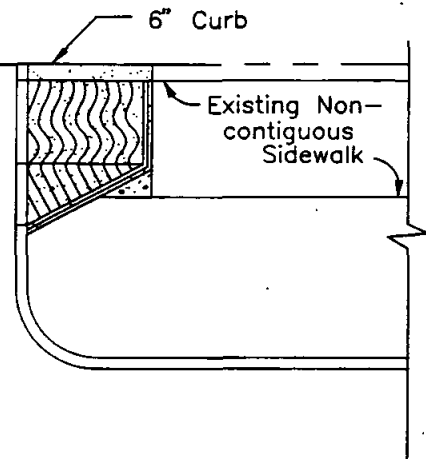
Revision	By	Approved	Date
ADA Rgmt	gth	RLM	2/95



R/W

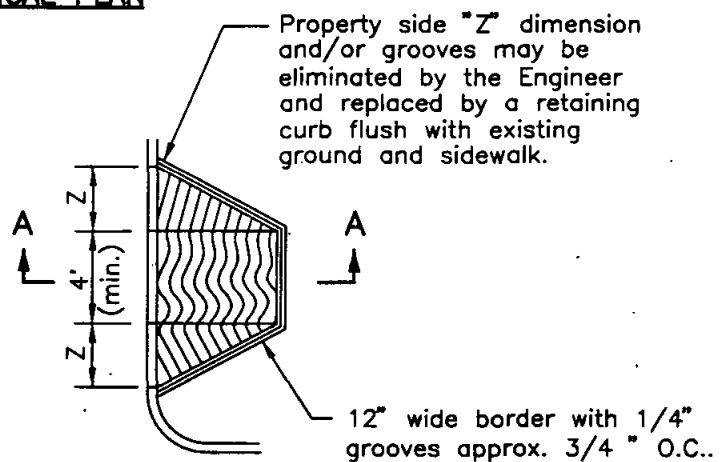
Alley

Street



TYPICAL PLAN

X	Y	Z
CURB HEIGHT	RAMP LENGTH (12:1)	SIDE SLOPE (8:1)
1.0"	1'-6"	1'-6"
1.5"	1'-6"	1'-6"
2.0"	1'-6"	1'-6"
2.5"	2'-0"	1'-6"
3.0"	2'-6"	1'-8"
3.5"	3'-0"	2'-0"
4.0"	3'-6"	2'-4"
4.5"	4'-0"	2'-8"
5.0"	4'-6"	3'-0"
5.5"	5'-0"	3'-4"
6.0"	5'-6"	3'-8"
6.5"	6'-0"	4'-0"
7.0"	6'-6"	4'-4"
7.5"	7'-0"	4'-8"
8.0"	7'-6"	5'-0"



PLAN VIEW

5% Max. Apron Slope

Sidewalk Limit

Retaining curb if required.

12" Wide Border

Meet existing sidewalk.

2% max.

See Detail-B
Std. Dwg. G-32

SECTION A-A

NOTE
See Standard Drawing G-32 for general notes.



Revision	By	Approved	Date
ADA Rgmt	RLM		7/96

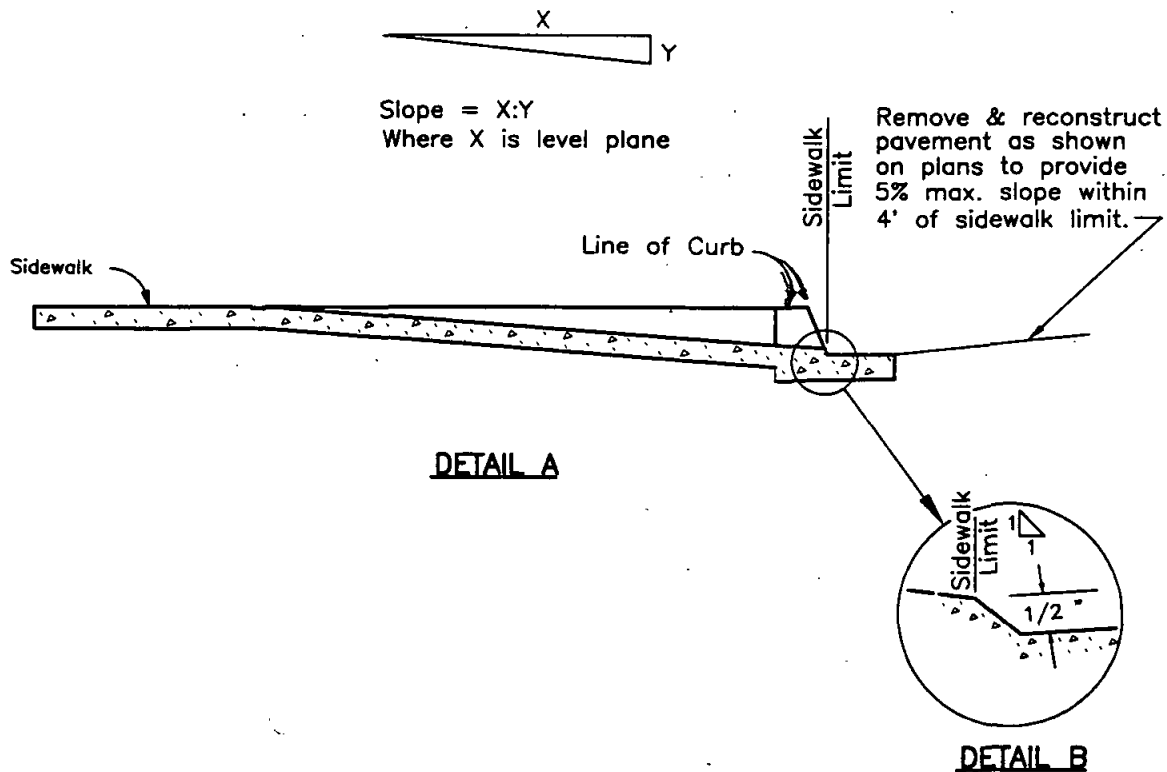
SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTRIAN RAMP
TYPE D

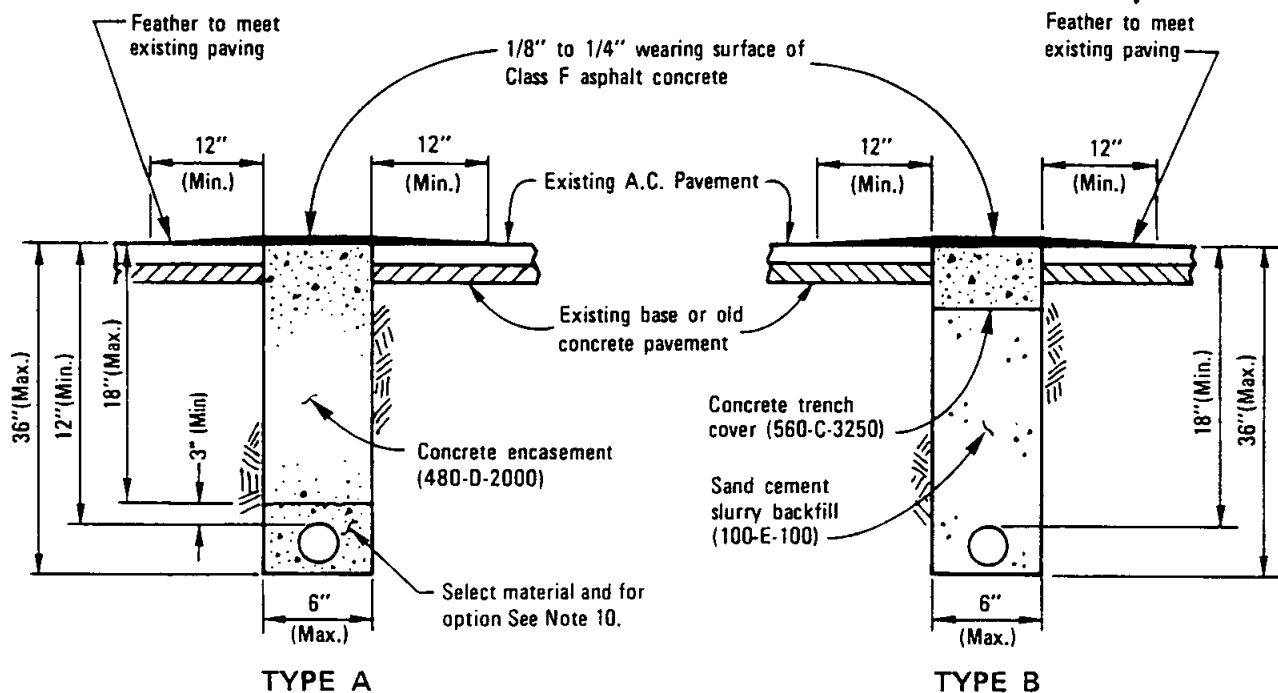
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Chairman R.C.E. 25902 Date

DRAWING
NUMBER G-31

1. The removal of existing concrete curb, gutter, sidewalk and pavement for pedestrian ramp installation shall comply with Standard Drawing G-11.
2. Areas shown thus:  shall have a heavy broom "ripple" texture finish, transverse to axis of ramp contrasting visually with adjoining surfaces.
3. Areas shown thus:  are the minimum required for a complete ramp installation and shall be concrete class 520-C-2500.
4. If obstructions such as inlets, utility poles, fire hydrants, etc., are encountered, the ramp locations may be adjusted upon the approval of the Resident Engineer.
5. Ramp slope shall be a minimum grade of 15:1.
6. The ramp slopes will be measured relative to the sidewalk slope, see Detail A below. Adjoining slope beyond ramp shall not exceed 20:1 (5%).



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARD COMMITTEE <i>Large Palmer 2-95</i> Chairman R.C.E. 25902 Date	SAN DIEGO REGIONAL STANDARD DRAWING			
DRAWING NUMBER G-32	GENERAL NOTES FOR PEDESTRIAN RAMPS			
		Revision Notes Detail	By 01 	Approved RLM
		Date 2/95 		



NOTES

1. Concrete encasement or sand cement slurry backfill shall have a maximum slump of 4 inches.
2. Concrete encasement and sand cement slurry backfill shall be thoroughly consolidated to encase conduits. Tampers or vibrators shall be used.
3. Concrete shall be screeded off to match existing pavement grade and floated to assure proper edge match.
4. A tack coat shall be applied to the concrete and existing asphalt pavement prior to placing the new asphalt pavement wearing surface.
5. Existing A.C. pavement will not require sawcutting when using rockwheel for excavation.
6. Concrete trench cover shall be a minimum 5 1/2 inches thick in alleys or local residential streets and 7 inches thick in all other streets.
7. Allow concrete backfill or concrete trench cover seven calendar days minimum but no longer than thirty calendar days to cure and dry before applying the asphalt concrete wearing surface.
8. In major or prime arterial streets, an approved set accelerating admixture, such as Calcium Chloride, may be used only with prior approval of the agency's Engineer.
9. Only type A shall be permitted for supply cables of 750 volts or less. See California Public Utility Commission General Order No. 128, Rule 33.4 D. (1) (b).
10. Select material with a minimum sand equivalent of 50 shall be backfilled to 3" min. above the conduit. Sand cement slurry backfill (100-E-100) may be substituted for select material.

Revision	By	Approved	Date
Notes	JP	Q.A.	9/00
Notes 8, 10	JP	Q.A.	5-90

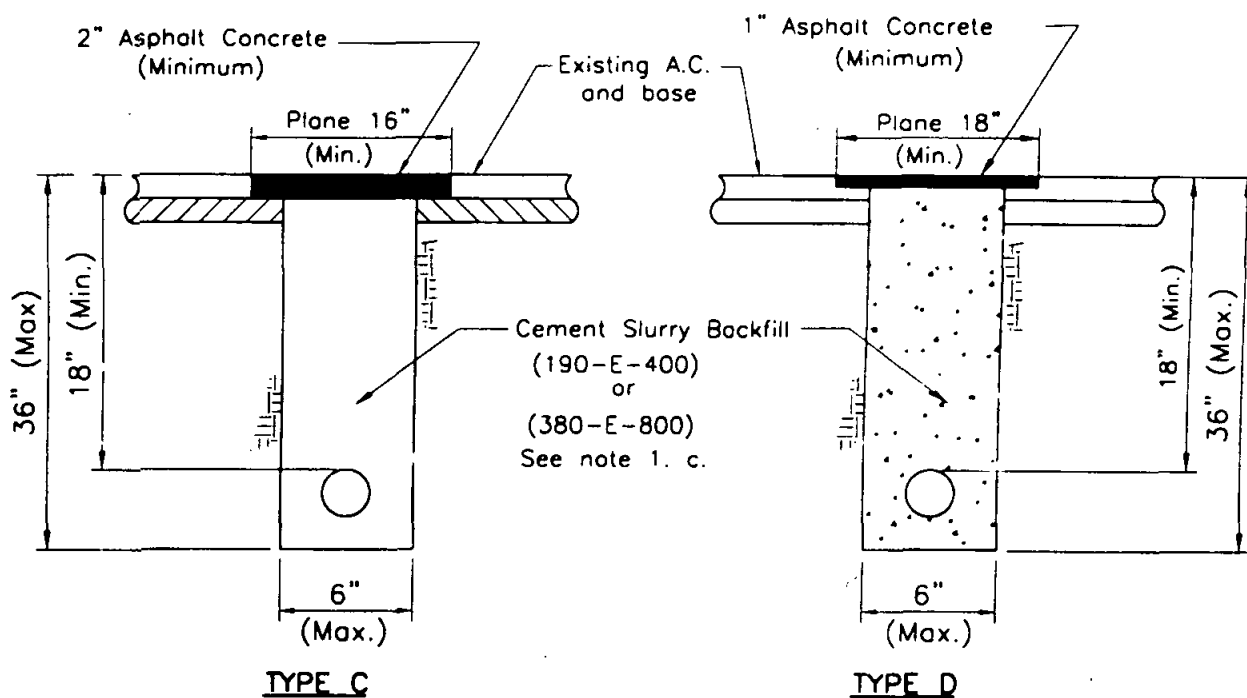
SAN DIEGO REGIONAL STANDARD DRAWING

NARROW TRENCHING TYPES A & B BACKFILL & RESURFACING

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. B. B. 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **G-33**



NOTES:

1. Cement Slurry Backfill:

- Cement slurry backfill shall have a maximum slump of 4 inches.
- Cement slurry backfill shall be thoroughly consolidated to encase conduits. Tampers or vibrators shall be used.
- Cement slurry backfill shall be as follows:
 Alleys and local residential streets Class (190-E-400)
 All other streets Class (380-E-800)

2. A tack coat shall be applied to the cement slurry backfill and existing asphalt pavement prior to placing the new asphalt surface.

3. Asphaltic Concrete Resurfacing:

Type C

- Allow cement slurry backfill 48 hours minimum to cure before resurfacing, unless approved by the Engineer.
- Thickness shall match the existing A.C. with a minimum of 2 inches.
- A.C. shall be hot mix.

Type D

- Allow cement slurry backfill seven days minimum to cure before planing.
- Plane existing asphalt pavement and slurry backfill, one half thickness of existing A.C., (1 inch minimum not to exceed 2 inches).
- A.C. shall be hot mix.

- A.C. resurfacing shall be sealed or chip sealed when required by the agency's Engineer.
- Existing A.C. pavement will not require sawcutting when using rockwheel for excavation.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

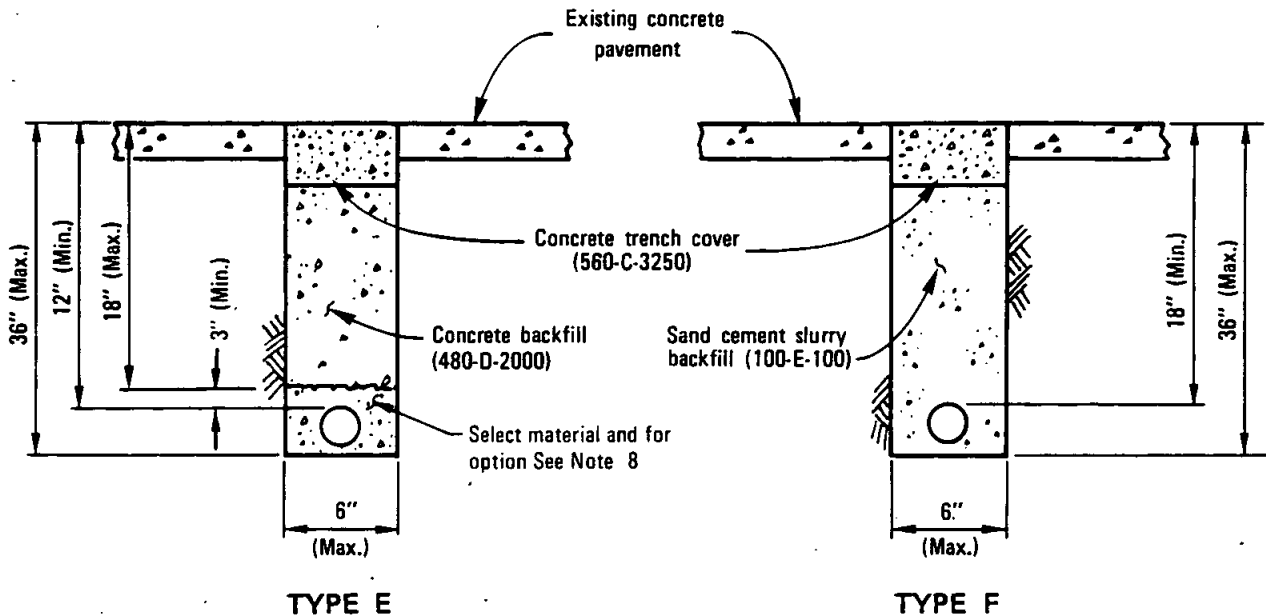
SAN DIEGO REGIONAL STANDARD DRAWING

Revision	By	Approved	Date
Note 3a	NL	RLM	1/97

Kapriel L. M. 3/27/97
Coordinator R.C.E. 2950 Date


**NARROW TRENCHING TYPES C & D
BACKFILL & RESURFACING**

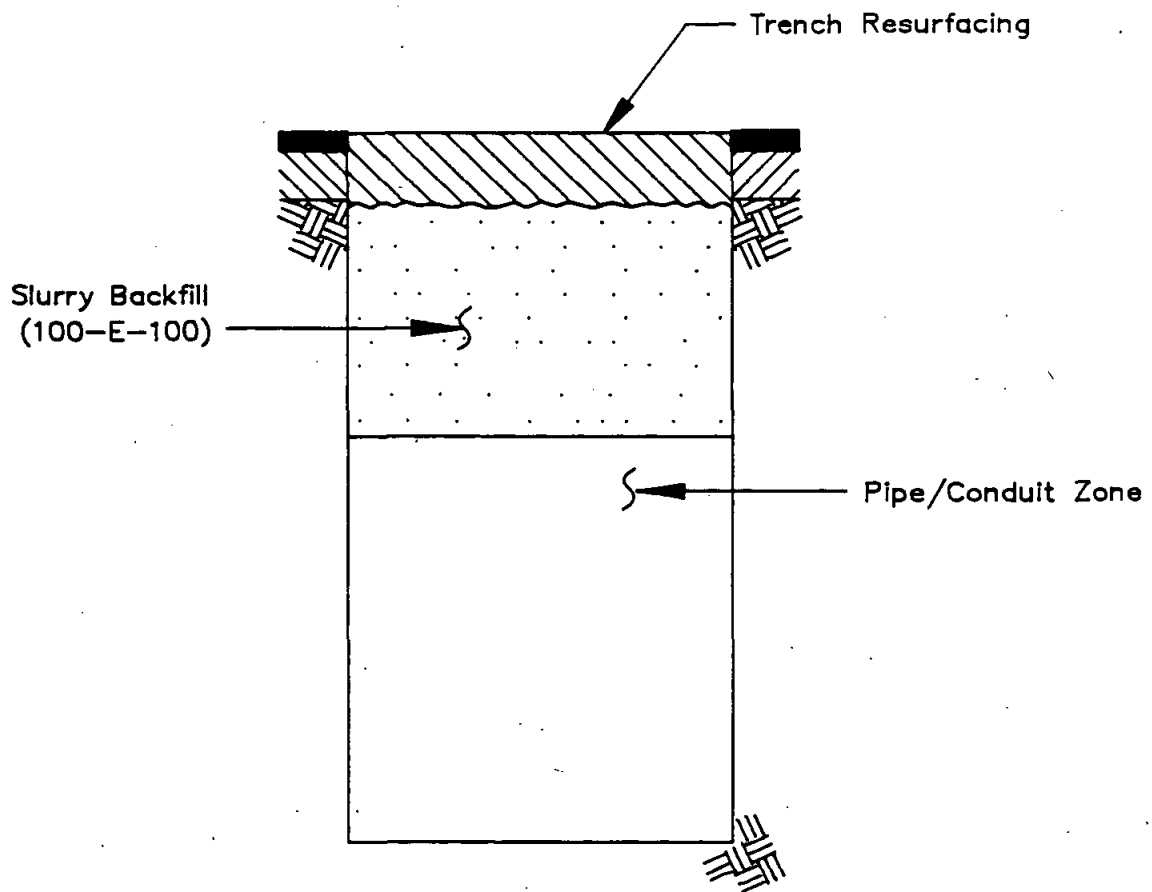
DRAWING
NUMBER **G-34**



NOTES

1. Concrete backfill or sand cement slurry backfill shall have a maximum slump of 4 inches.
2. Concrete backfill and sand cement slurry backfill shall be thoroughly consolidated to encase conduits. Tampers or vibrators shall be used.
3. Concrete shall be screeded off to match existing pavement grade and floated to assure proper edge match.
4. Concrete trench cover shall be a minimum of 5½ inches thick in alleys or local residential streets and 7 inches thick in all other streets.
5. Existing concrete pavement will not require sawcutting when using rockwheel for excavation.
6. In major or prime arterial streets, an approved set accelerating admixture, such as Calcium Chloride, may be used only with prior approval of the agency's Engineer.
7. Only Type E shall be permitted for supply cables of 750 volts or less. See California Public Utility Commission General Order No. 128, Rule 33.4 D. (1) (b).
8. Select material with a minimum sand equivalent of 50 shall be backfilled to 3" min. above the conduit. Sand cement slurry backfill (100-E-100) may be substituted for select material.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Notes 7, 8	GH	9/88				
Notes 6, 8	JP	5-92		NARROW TRENCHING TYPES E & F BACKFILL & RESURFACING		 4-25-86 Coordinator R.C.E. C21133 Date
				DRAWING NUMBER		G-35



NOTES:

1. Trench resurfacing shall be done according to governmental (permitting) Agency's requirements.
2. The sand used for the slurry backfill shall meet the requirements for fine aggregate Subsection 400-1.3 listed in the Standard Specifications for Public Works Construction. Slurry must be firm prior to trench resurfacing.
3. Slurry backfill may be used in permeable soils and shall not be used where it will impede subsurface drainage.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Harry Rubin SEPT. 1988
Chairman Date

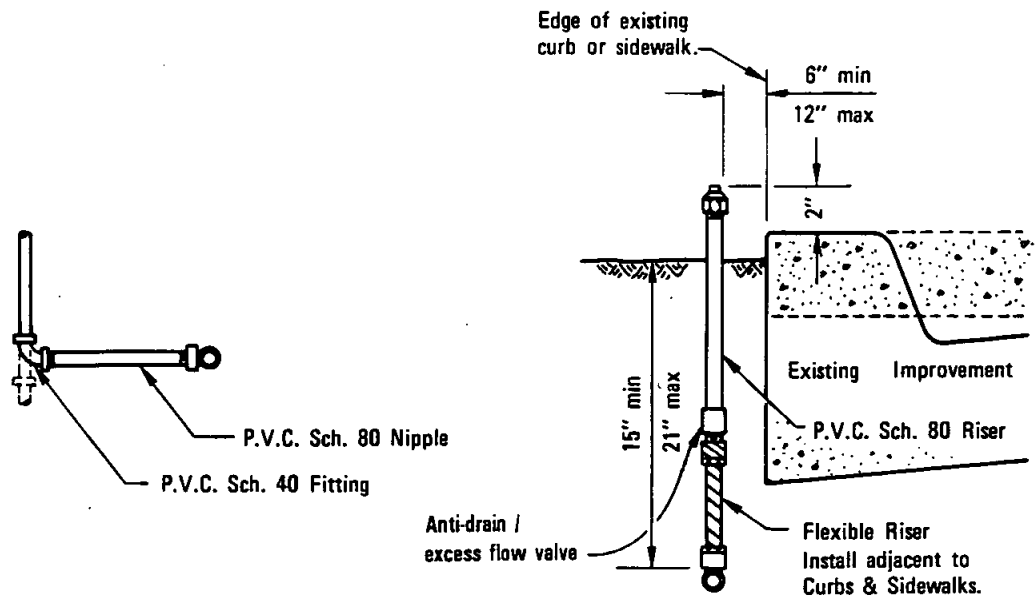
SAN DIEGO REGIONAL STANDARD DRAWING

SLURRY BACKFILL

Revision	By	Approved	Date

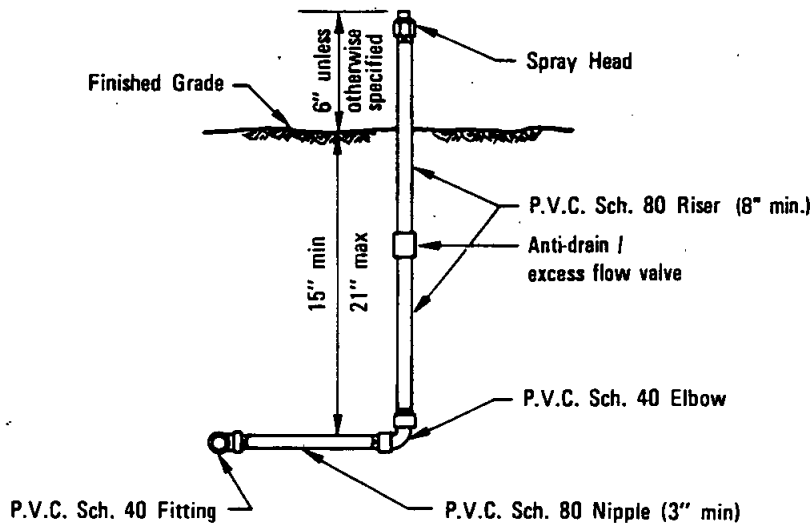
**DRAWING
NUMBER G-36**

SPRINKLER IRRIGATION SYSTEMS



PLAN VIEW

LOCATION OF SPRINKLER HEADS ADJACENT TO EXISTING IMPROVEMENTS



ELEVATION

NOTES

1. Teflon tape, 3/4" wide, shall be used on all threaded connections.
2. Close nipples shall not be used.

LEGEND ON PLANS

Show a number to indicate type head.



Revision	By	Approved	Date
Anti-Drain	JP	G. Z.	5-92

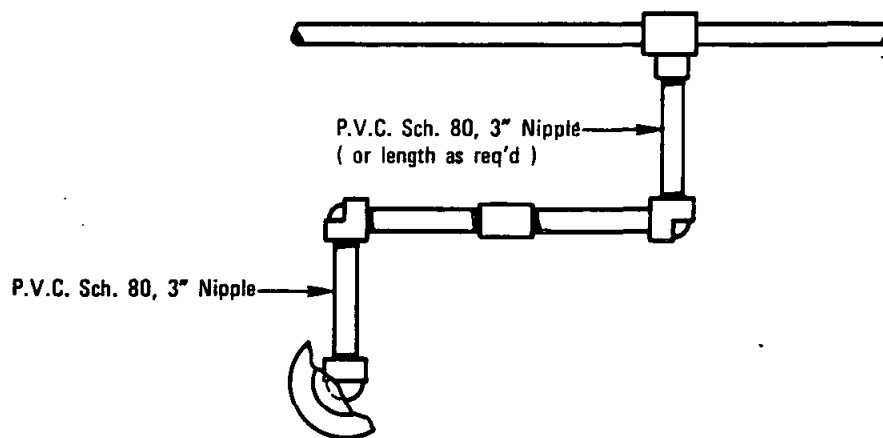
SAN DIEGO REGIONAL STANDARD DRAWING

SHRUBBERY SPRINKLER HEAD FIXED SPRAY TYPE

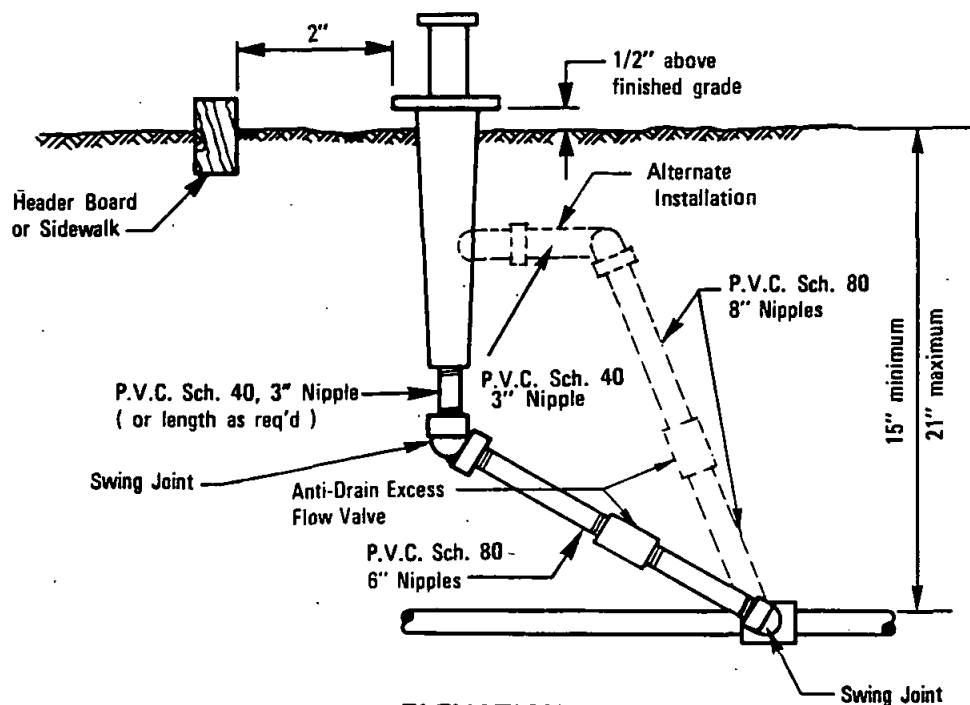
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Oliver P. Keshner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER I-1



PLAN



ELEVATION

NOTES

1. All fittings shall be P.V.C. Sch. 40.
2. Teflon tape, 3/4\"
3. Short nipples shall not be used.
4. Anti-drain/Excess Flow Valve shall be installed under all heads unless heads have a "Built-in" Anti-drain or check valve.

LEGEND ON PLANS

Show a number to indicate type head 

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen S. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

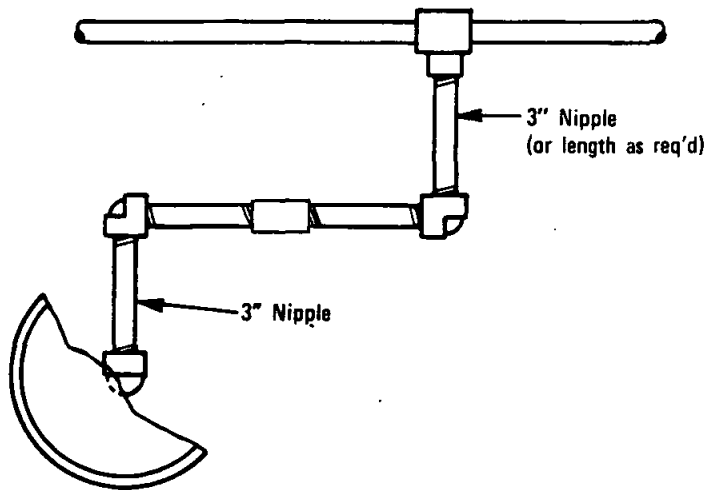
SAN DIEGO REGIONAL STANDARD DRAWING

SPRINKLER HEAD
POP UP SPRAY TYPE

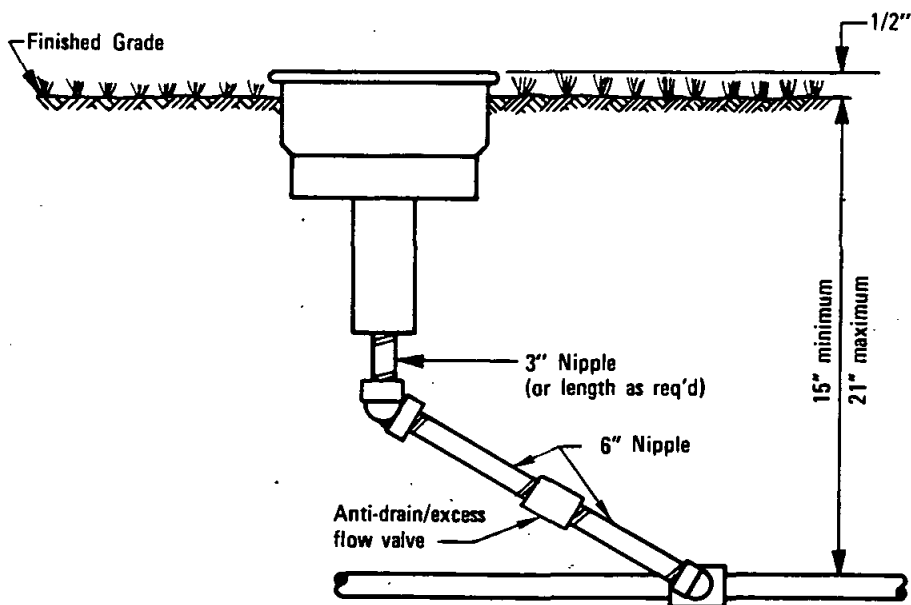
DRAWING
NUMBER

I-2

Revision	By	Approved	Date
Alt. Instl.	TRP	M.B.	10-72
VALVE	22	Q.H.	3-88
Swing joint	JP	S.H.	5-92



PLAN



ELEVATION

NOTES

1. All fittings shall be P.V.C. Sch. 40.
2. All nipples shall be P.V.C. Sch. 80.
3. Teflon tape, 3/4" wide, shall be used on all threaded connections.
4. Short nipples shall not be used.
5. Anti-drain/Excess Flow Valve shall be installed under all heads unless heads have a "Built-in" Anti-drain or check valve.

LEGEND ON PLANS

Show a number to indicate type head

Revision	By	Approved	Date
Valve	NC	AK	9/88

SAN DIEGO REGIONAL STANDARD DRAWING

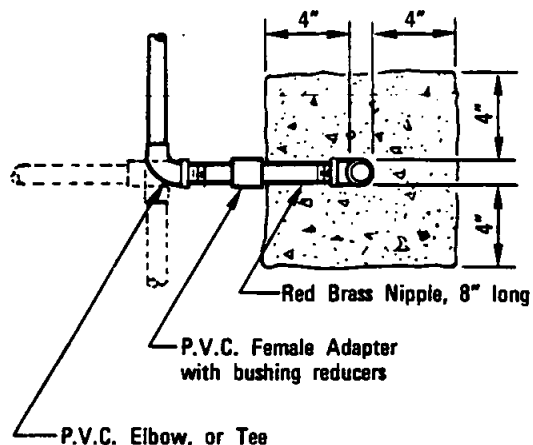
**LAWN SPRINKLER HEAD
POP UP ROTARY (WITH SWING JOINT)**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

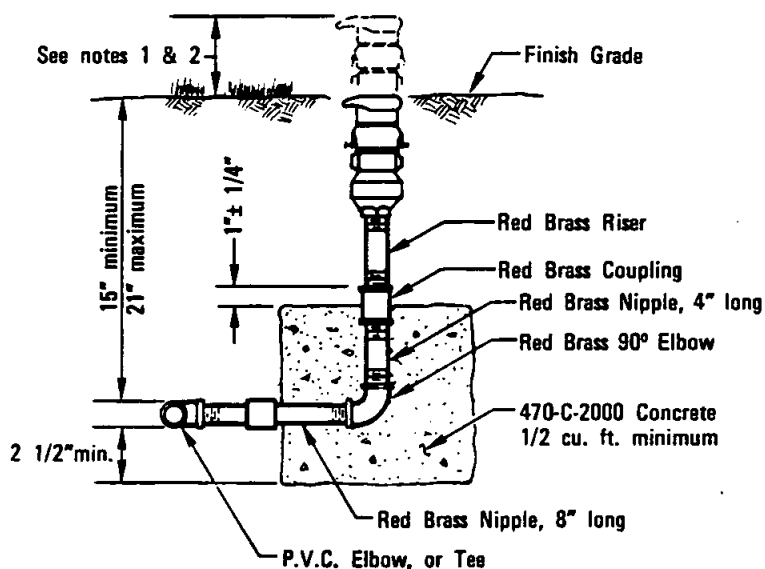
Alfred A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

1-3



PLAN

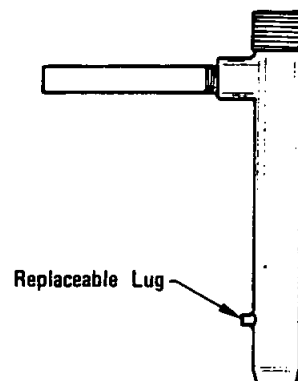


ELEVATION

NOTES


1. Quick coupling valves in lawn areas shall be set to grade.
2. Quick coupling valves in shrub areas shall be set 2 inches above grade.
3. Dimensions of concrete anchors are minimum.
4. Close nipples shall not be used.

COUPLER KEY-
SINGLE LUG



KEY FOR
LOCK TOP

LEGEND ON PLANS

Q.C.V. 

Revision	By	Approved	Date
Note 2	TKP	M.B.	10-82

SAN DIEGO REGIONAL STANDARD DRAWING

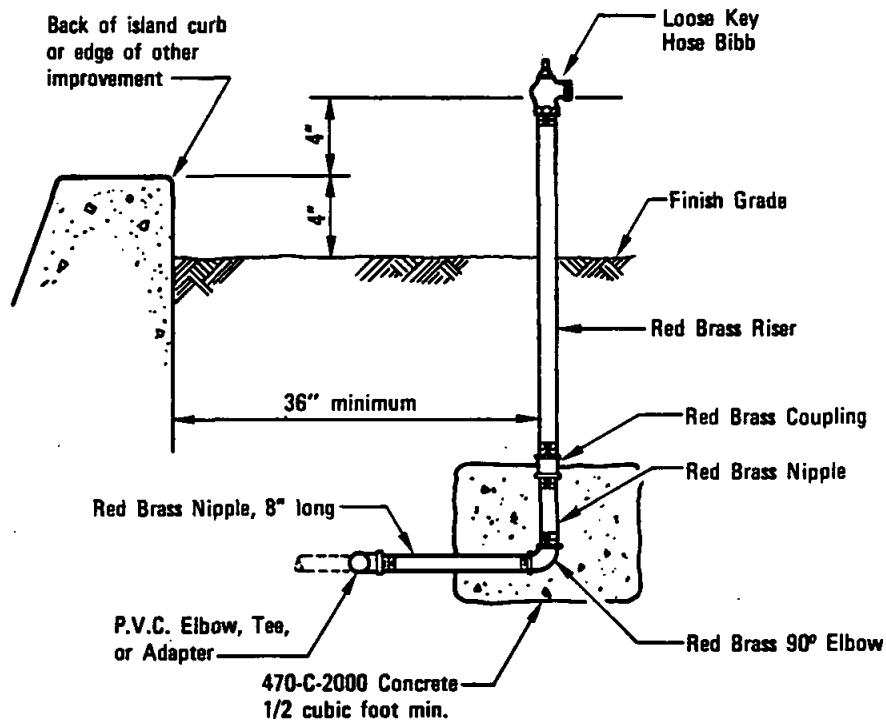
QUICK COUPLING VALVE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allard A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

I-5



NOTES

- Hose bibb shall be loose key operated, all brass or bronze construction, angle pattern with removable bonnet and stem assembly, replaceable seat washers and stem packing glands.
- Unless otherwise specified, the hose connection thread shall be 3/4" male hose thread (pacific coast), and the riser opening thread shall be 3/4" female I.P.S. Discharge opening shall be 90° to riser opening.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

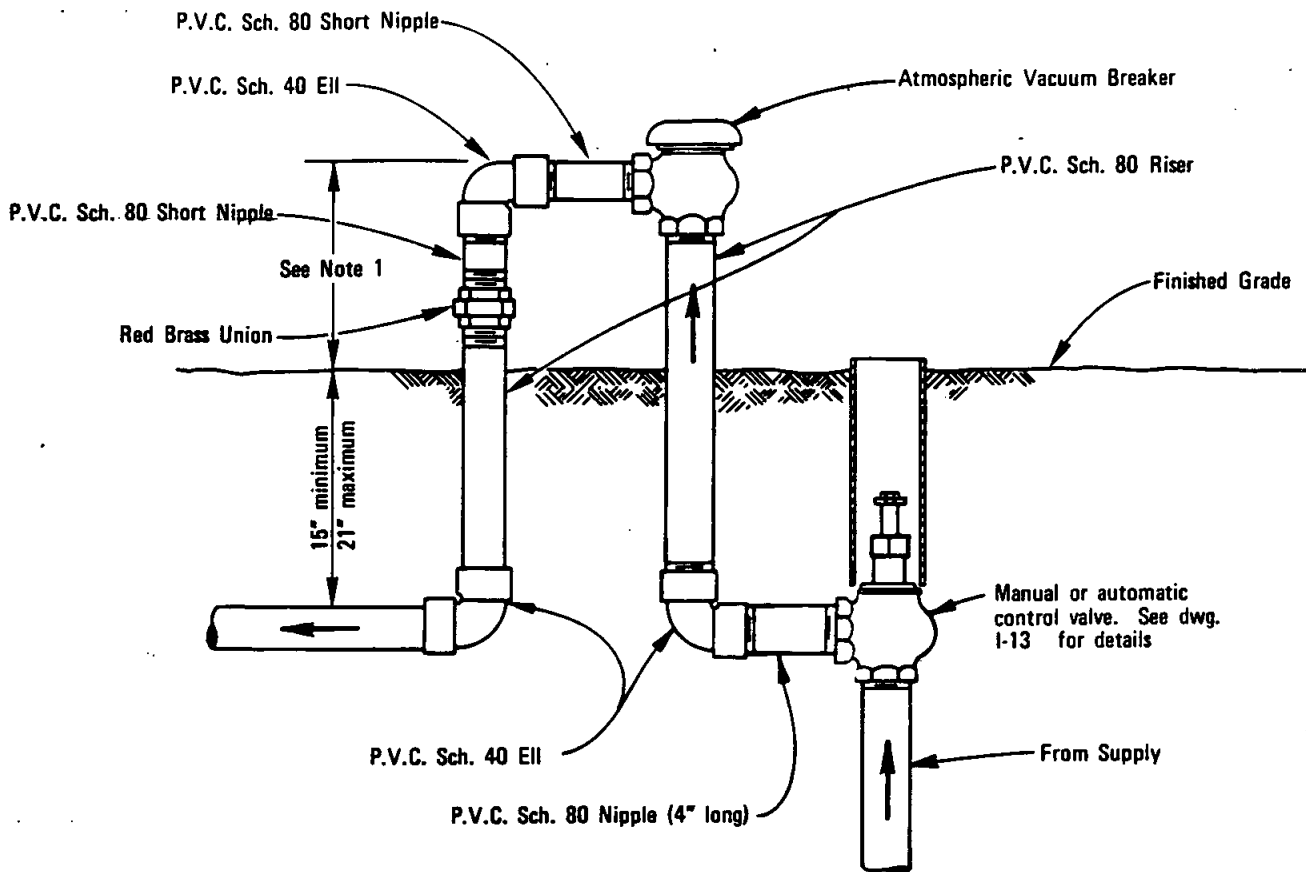
Allan O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

HOSE BIBB (GARDEN VALVE)

Revision	By	Approved	Date
Set Back	IR	M.B.	10-82

DRAWING
NUMBER 1-6



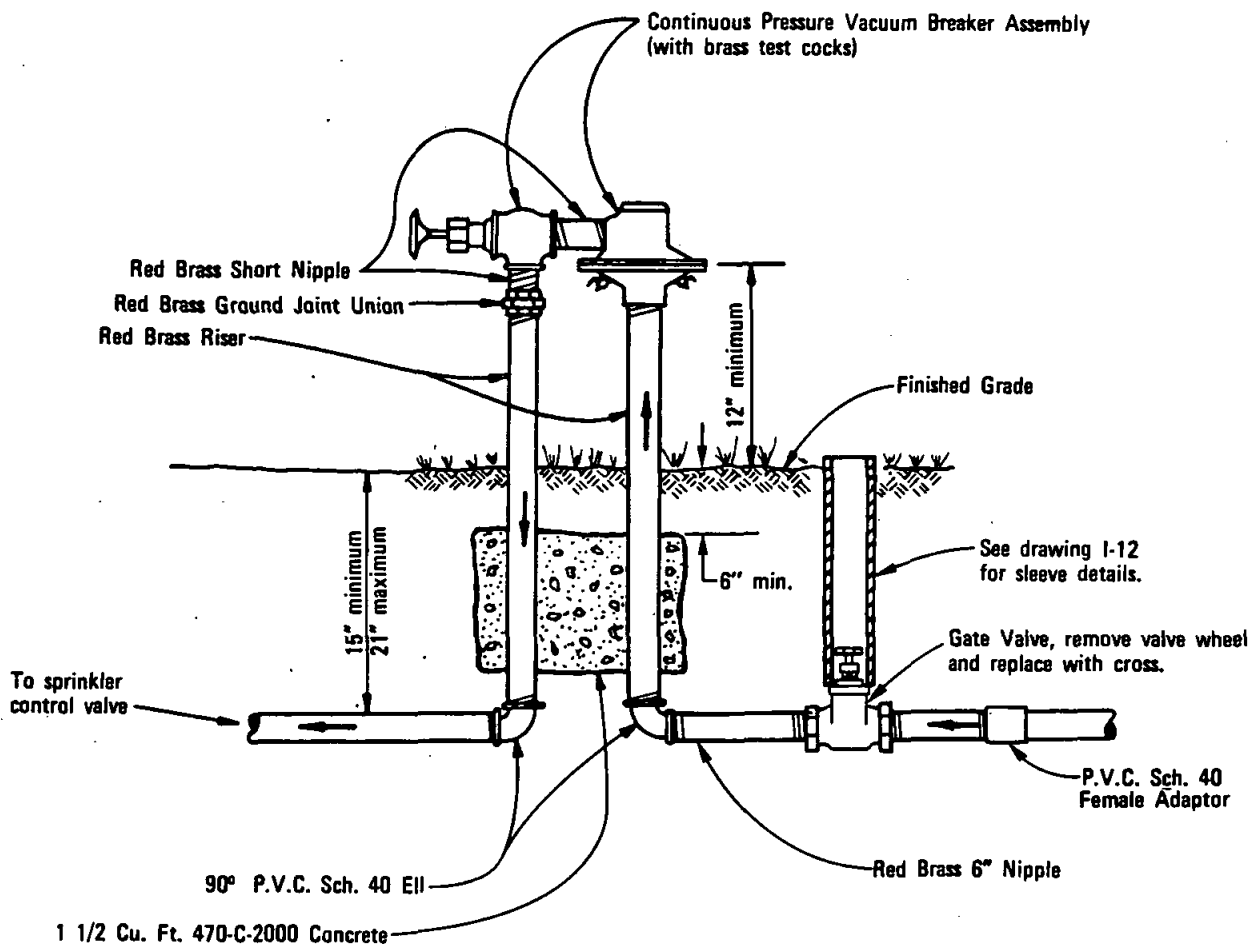
NOTES

1. Atmospheric vacuum breakers shall be installed approximately 6" above the finished grade and above a sufficient number of sprinkler heads closest to the vacuum breaker so that at no time will it be subjected to back pressure or drainage.
2. Close nipples shall not be used.
3. All fittings, including the atmospheric vacuum breaker, shall not be of smaller size than the valve.
4. Teflon tape, 3/4" wide, shall be used on all threaded connections.
5. For use on lines 2 inches and smaller.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Union	TRP	M.B.	10-82			
				BACKFLOW PREVENTER ATMOSPHERIC VACUUM BREAKER (2" & SMALLER)		<i>Allen G. Kneeland</i> Dec. 1975 Coordinator R.C.E. 19807 Date
						DRAWING NUMBER 1-7



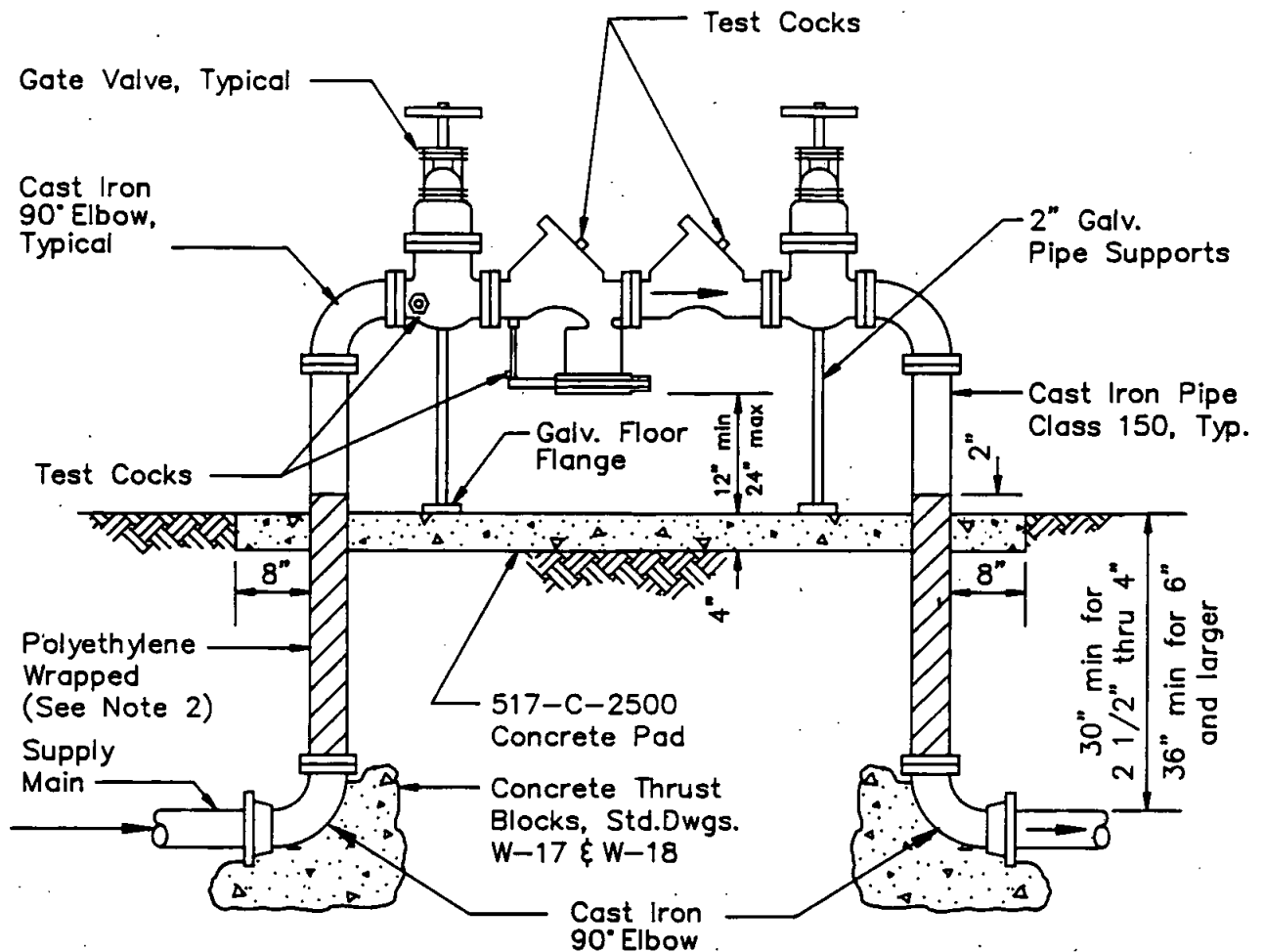
NOTES

1. Continuous pressure vacuum breakers shall be installed approximately 12 inches above finished grade and at the highest point in the line.
2. Continuous pressure vacuum breakers shall not be subjected to back pressure or drainage.
3. Teflon tape 3/4\" wide shall be used on all threaded connections.
4. Close nipples shall not be used.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	SAN DIEGO REGIONAL STANDARD DRAWING	Revision	By	Approved	Date
		Note 1	<i>[Signature]</i>	D.S.	7-79
<i>Allen A. Kuehn</i> Dec. 1975 Coordinator R.C.E. 19807 Date	BACKFLOW PREVENTER - CONTINUOUS PRESS. VAC. BREAKER ASSY. (2\" & SMALLER)	Reference	MP	MLB.	10-82
DRAWING NUMBER	1-8				



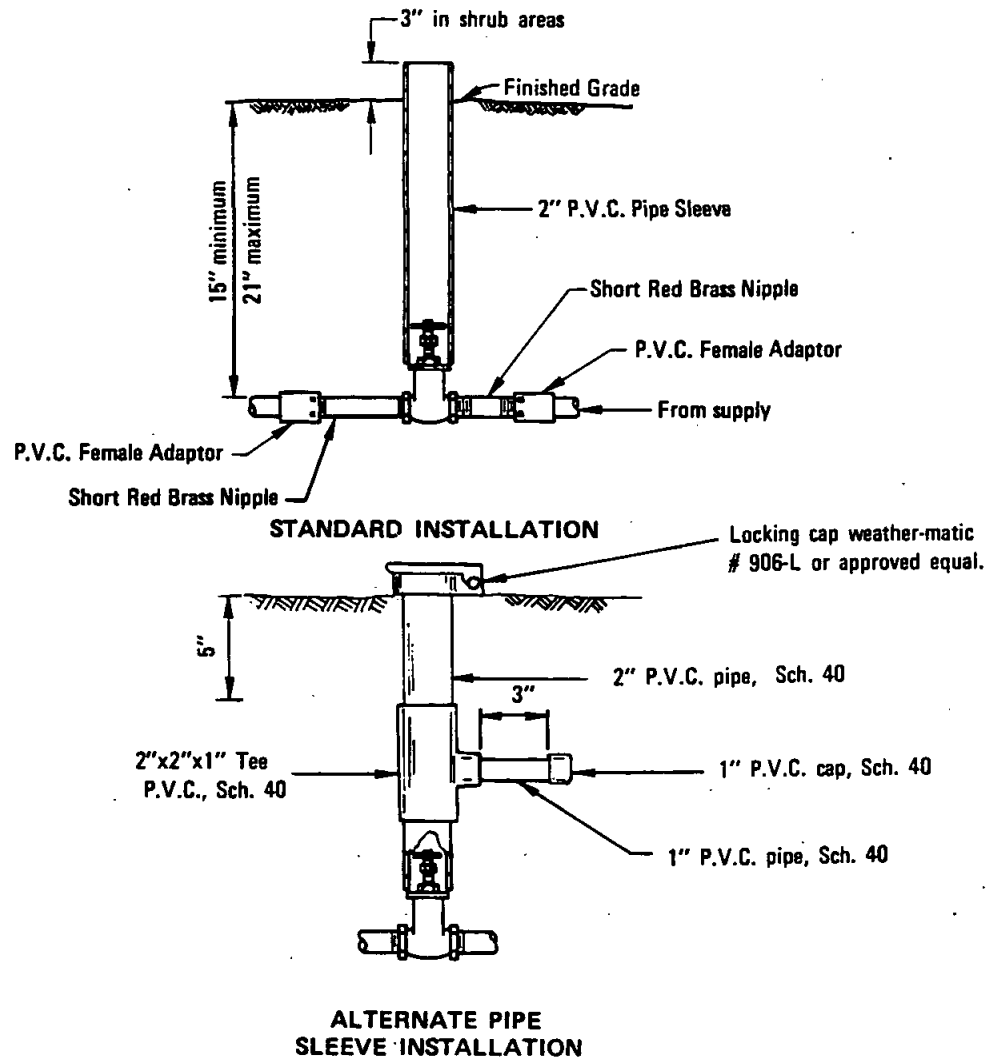
NOTES:

1. All fittings on assembly shall be flanged.
2. Buried cast iron pipe and fittings shall be polyethylene wrapped with 2 inch wide plastic backed adhesive tape (8 mil thickness). Use 1/2 inch overlap.
3. Cast iron pipe and fittings shall be cement mortar lined.
4. All exposed cast iron shall be painted with one coat of primer and two coats of exterior enamel.
5. Concrete pad shall be 24 inches wide.
6. Backflow preventer assembly shall be tested upon installation by a certified backflow device tester. Contractor shall provide Engineer with written test results completed by certified backflow tester prior to the backflow preventer assembly's acceptance by Engineer.
7. Adapt inlet and outlet fittings to main as required.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE Chairman Date
New Dwg.	SC	A.H.	10/88			
				BACKFLOW PREVENTER REDUCED PRESSURE PRINCIPLE ASSEMBLY-LARGER THAN 2"		DRAWING NUMBER 1-9



NOTES

1. All valves shall be furnished with a standard manual control valve bronze cross handle.
2. All valves shall be installed within 12" of the water main, unless otherwise shown on the plans.
3. Close nipples shall not be used.

LEGEND ON PLANS



G.V.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

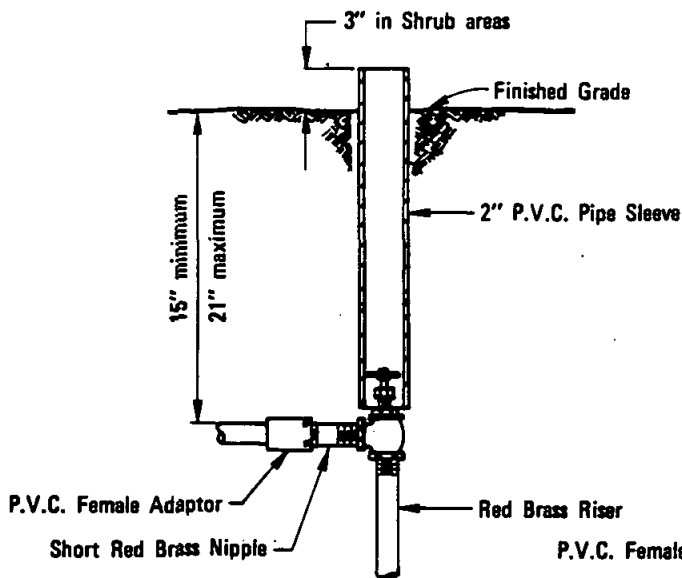
DRAWING
NUMBER

1-12

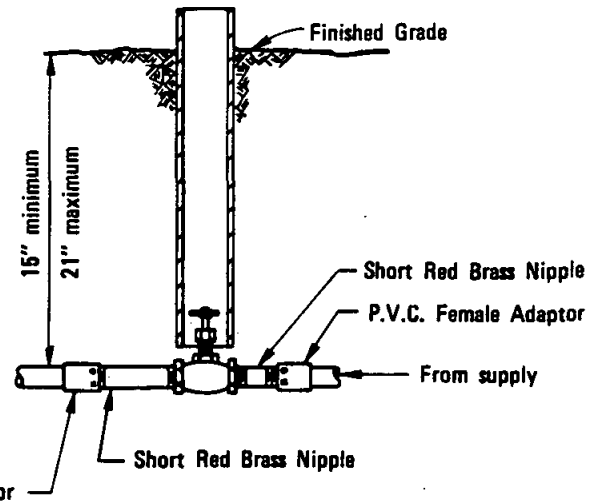
SAN DIEGO REGIONAL STANDARD DRAWING

GATE VALVE (2" AND SMALLER)

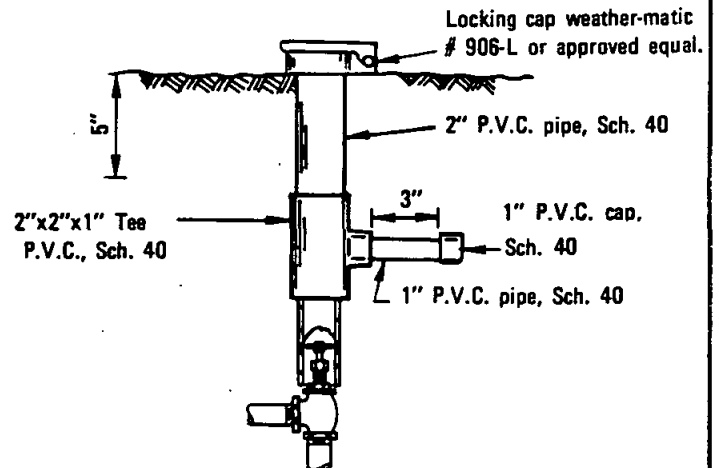
Revision	By	Approved	Date
Union	TRP	TH.B.	10-82



ANGLE VALVE



GLOBE VALVE
(special cases only)



**ALTERNATE PIPE
SLEEVE INSTALLATION**

NOTES

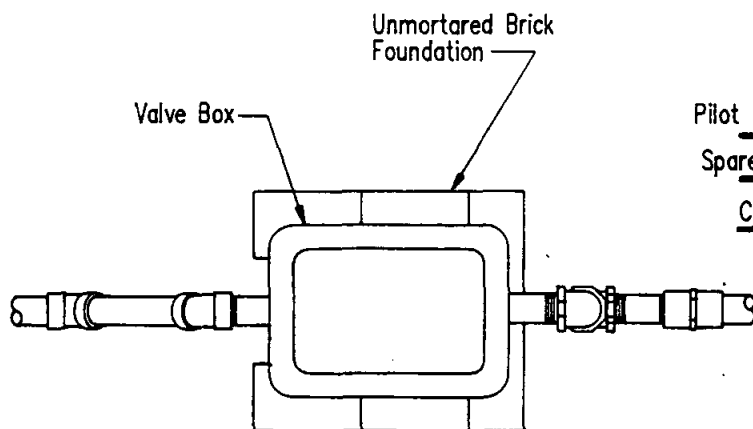
1. All Manual Valves shall be furnished with a standard manual control valve bronze cross handle.
2. All valves shall be installed with 12" of the water main, unless otherwise shown on the plans.
3. All Manual Valves shall be furnished with a removable bonnet and packing gland nut.
4. Close Nipples shall not be used.
5. Locking cap shall be mounted flush with finish grade in turf areas & 1 inch above finish grade in shrub areas.

LEGEND ON PLANS

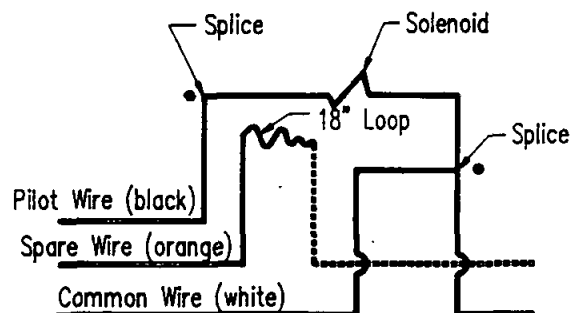


M.C.V.

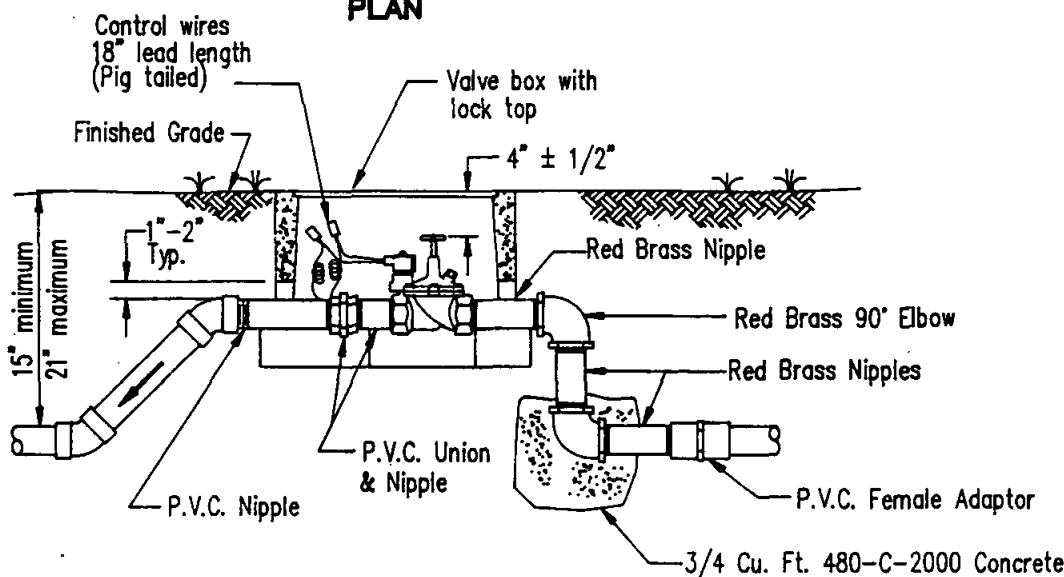
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Union	TRP	THB	10-82			Allen P. Kershner	Dec. 1975
Note 5	SR	THB	5-86	MANUAL VALVES		Coordinator R.C.E. 19807	Date
				DRAWING NUMBER		I-13	



PLAN



TYPICAL ELEMENTARY
DIAGRAM FOR WIRING
ELECTRICAL REMOTE
CONTROL VALVE



ELEVATION

NOTES:

1. Splicing shall be made in valve boxes and pull boxes only. See Standard Drawing I-15 for splice details.
2. Close nipples shall not be used.
3. Spare wires terminating in valve boxes shall have their ends insulated, the same as for a splice.
4. When two or more valves are installed in the same location, they shall be in manifold using red brass fittings, with a globe valve installed at the start of the manifold.
5. All valves shall be installed with a union on the downstream side of the valve. The union shall be P.V.C.
6. Valve/controller identification shall be painted on the valve boxes. Use only aluminum asphaltic base water proof paint.
7. Clearance between piping and valve box shall be 1" to 2" typical.

LEGEND ON PLANS

▼ R.C.V

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

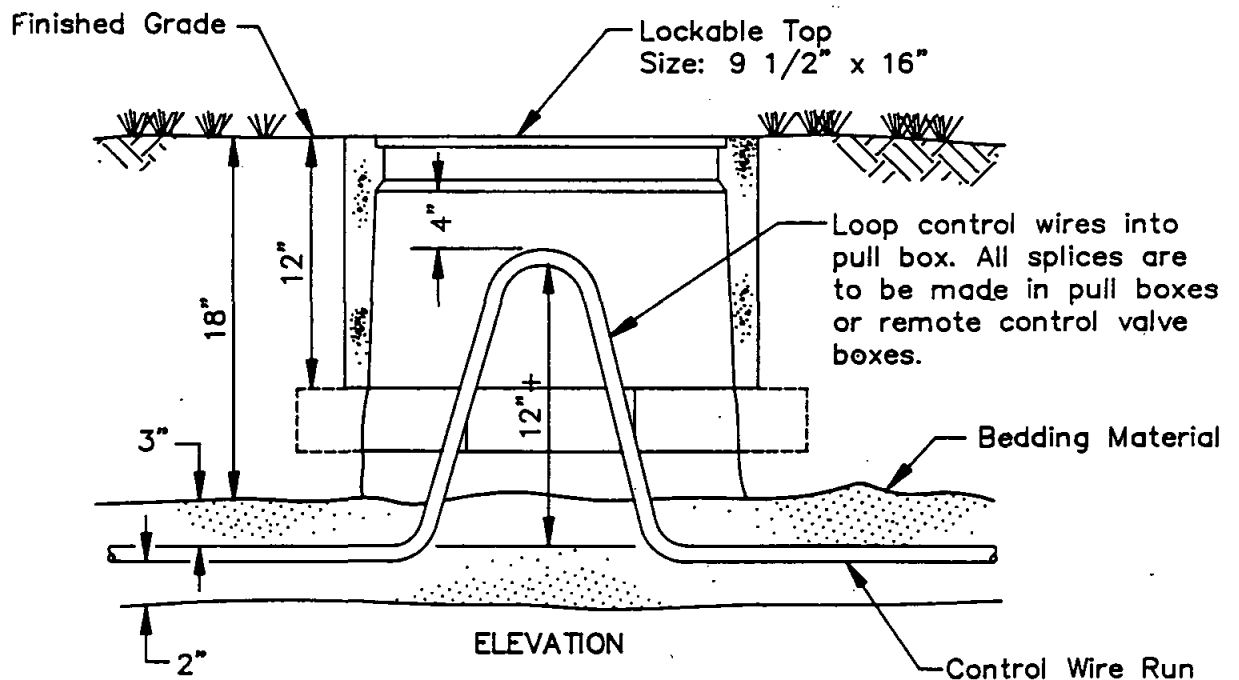
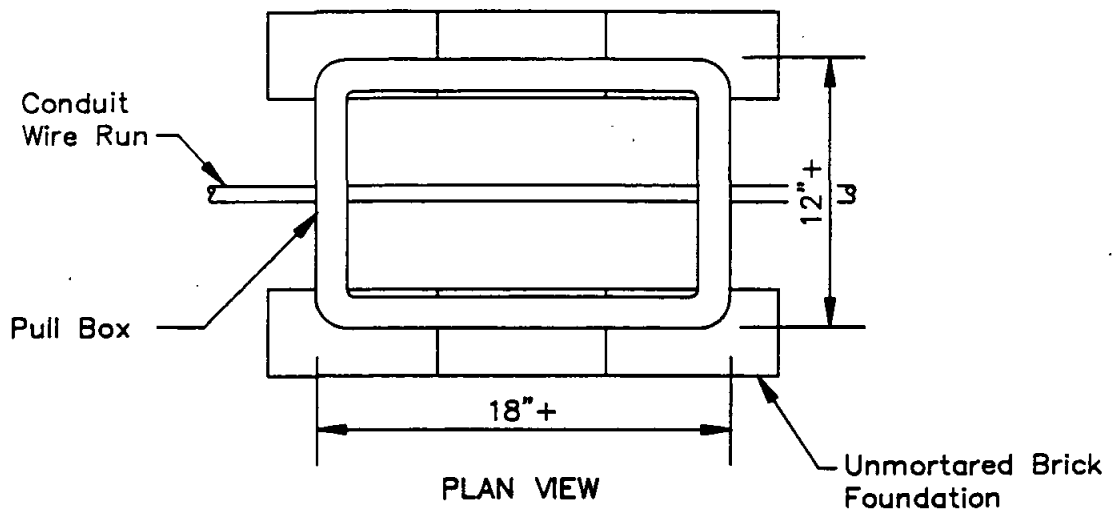
SAN DIEGO REGIONAL STANDARD DRAWING

Revision	By	Approved	Date

DRAWING
NUMBER I-14

REMOTE CONTROL VALVE

John J. P. Davis 5-11-82
Chairman RCE 25902 Date



NOTES

1. Install pull boxes as shown on plans.
2. At junctions where runs combine, splice common ground in pull box.
3. Pull box cover shall be permanently marked "ELECTRIC".
4. Conductors for each controller clock shall be harnessed separately and at sufficient intervals to maintain a definite bundle.
5. All splices shall be made with a properly set mechanical splice connector entirely enclosed in self-curing resin and shall be completely water-proof.
6. All spare wire ends shall be insulated in the same manner as wire splices.
7. If specified, all splices shall be soldered with metallic alloy solder prior to installing connectors.
8. Wire bundles inside pull boxes shall be at least 4 inches from the under side of the box cover. Minimum size pull box shall be as shown above. Larger boxes may be necessary to meet 4 inch clearance requirement.

LEGEND



Revision	By	Approved	Date
Notes	RC	A.H.	10/88

SAN DIEGO REGIONAL STANDARD DRAWING

ELECTRICAL PULL BOX FOR DIRECT BURIAL CONTROL WIRES AND SPLICE DETAILS

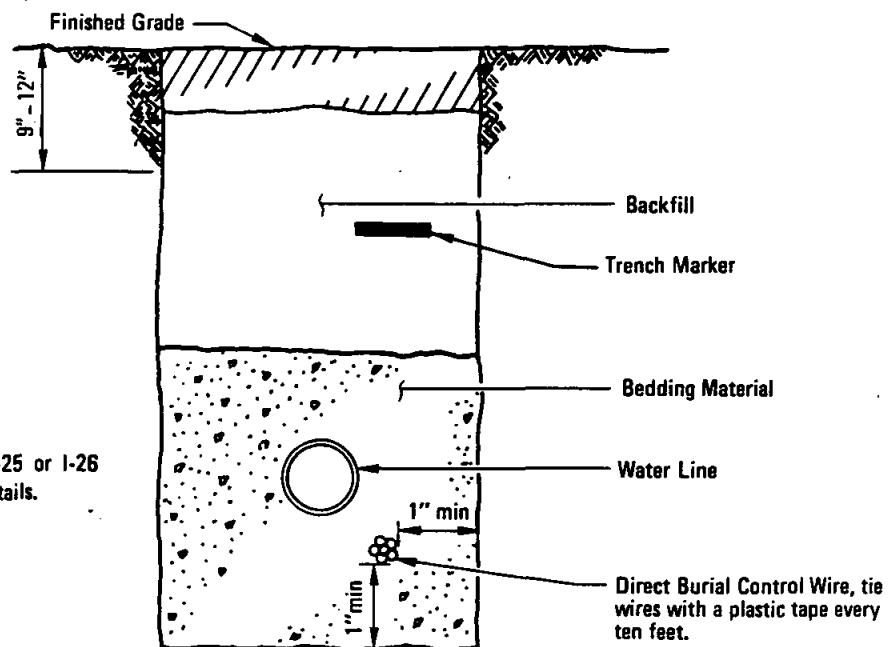
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen G. Kunkel *Dec. 1975*
Coordinator R.C.E. 19807 Date

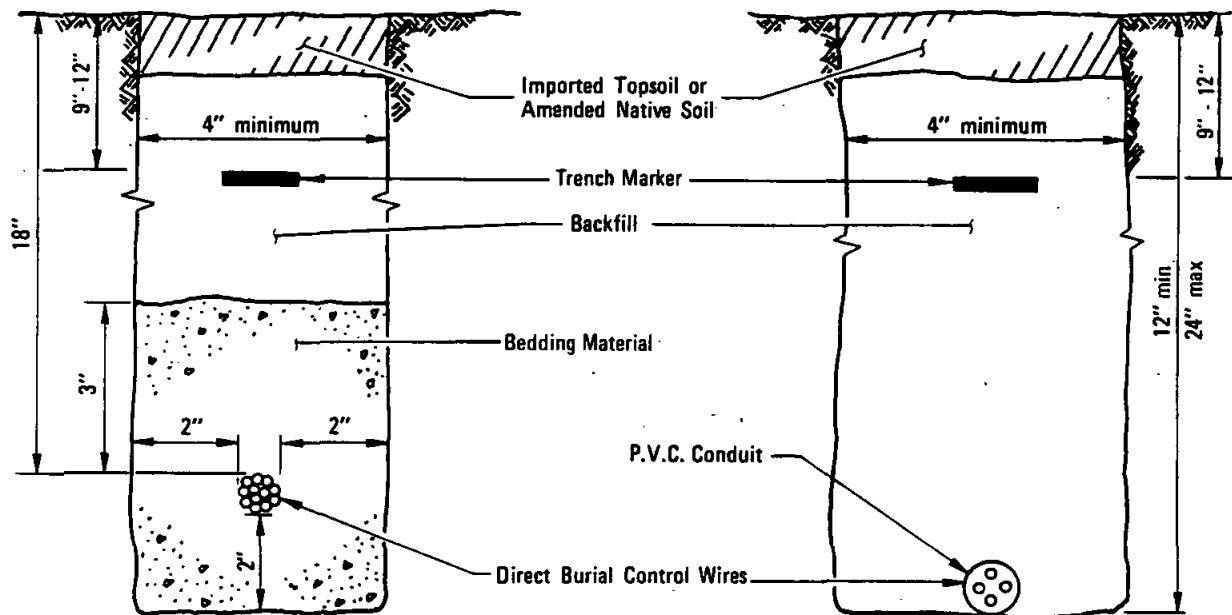
DRAWING
NUMBER **I-15**

NOTE

See Standard Drawing I-25 or I-26 for water line trench details.



NORMAL LOCATIONS OF CONTROL WIRES



ALTERNATE LOCATION OF CONTROL WIRES

NOTES:

- Bedding material shall have a sand equivalent of 50, minimum
- Place a 3" wide red continuous plastic tape trench marker, 9" to 12" below finish grade, directly above the direct burial control wires.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

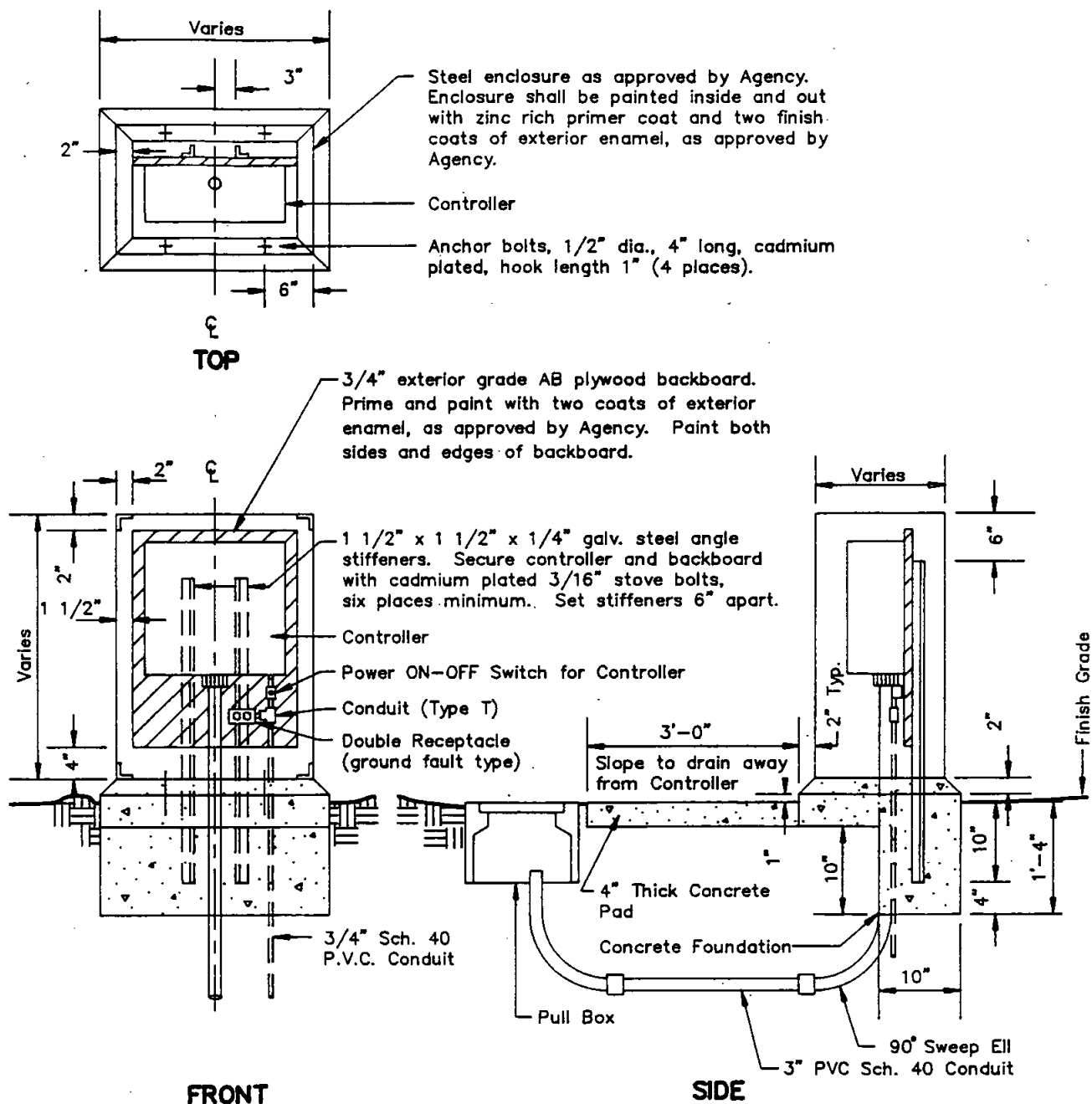
Allan O. Kerschbaum *Dec. 1975*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

DIRECT BURIAL CONTROL WIRE

Revision	By	Approved	Date
Reference	TRP	M.B.	10-82
MARKER	SC	O.H.	5-88

DRAWING
NUMBER I-16



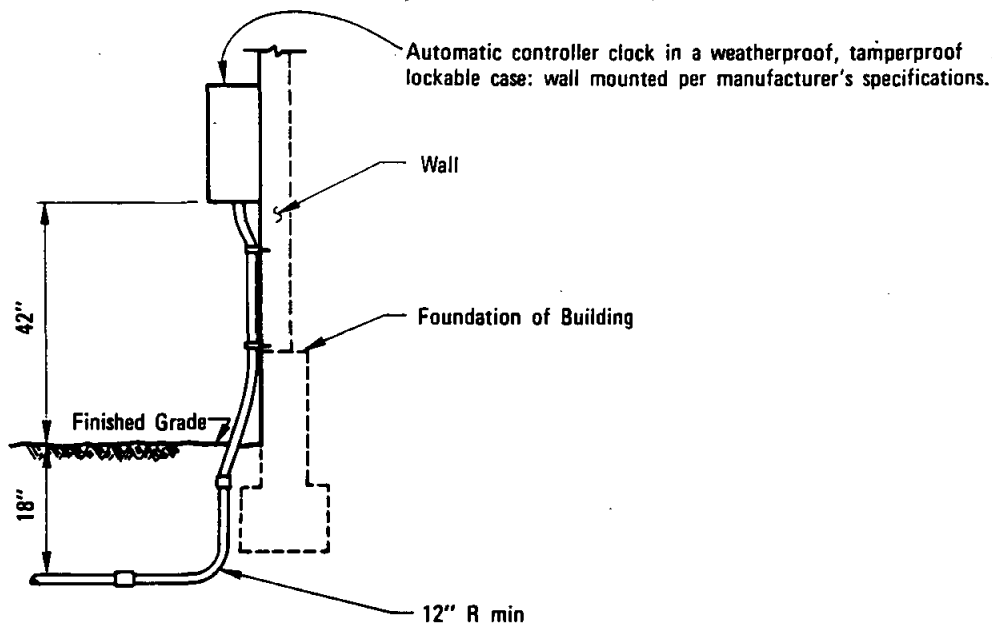
NOTES:

1. Install in each enclosure, one 25 watt incandescent lamp in a two-prong plug in light socket. Install in receptacle.
2. A 15 amp (minimum) circuit is required at each double receptacle (120 V).
3. Each controller shall have a power ON-OFF switch, with lock-out. tag-out facility.

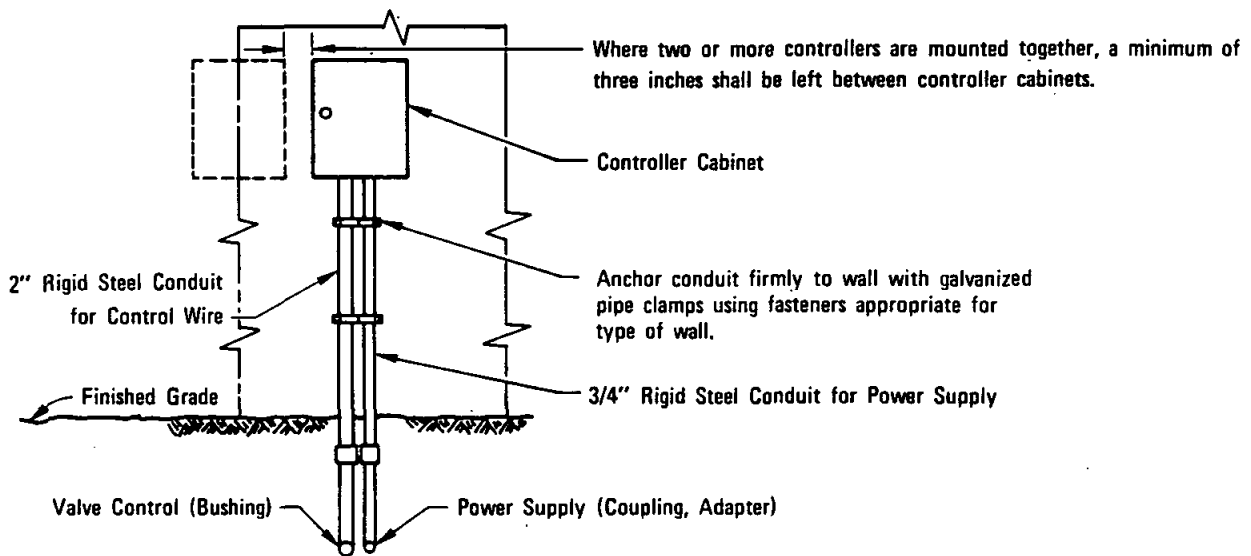
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				IRRIGATION SYSTEMS ELECTRIC CONTROLLER CLOCK PEDESTAL MOUNTING		<i>Chapman</i> <i>5-11-92</i> Date <i>RCE 25902</i>
						DRAWING NUMBER I-17



SIDE VIEW



ELEVATION

NOTES

1. For location of supply conduit and conductor, refer to the plans.
2. Controller shall be grounded at power supply by ground wire.
3. Make all electrical connections inside controller cabinet.
4. Each controller shall have a power on/off switch, with lock-out, tag-out facility.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allard A. Kerschbaum *Dec. 1975*
Coordinator R.C.E. 19807 Date

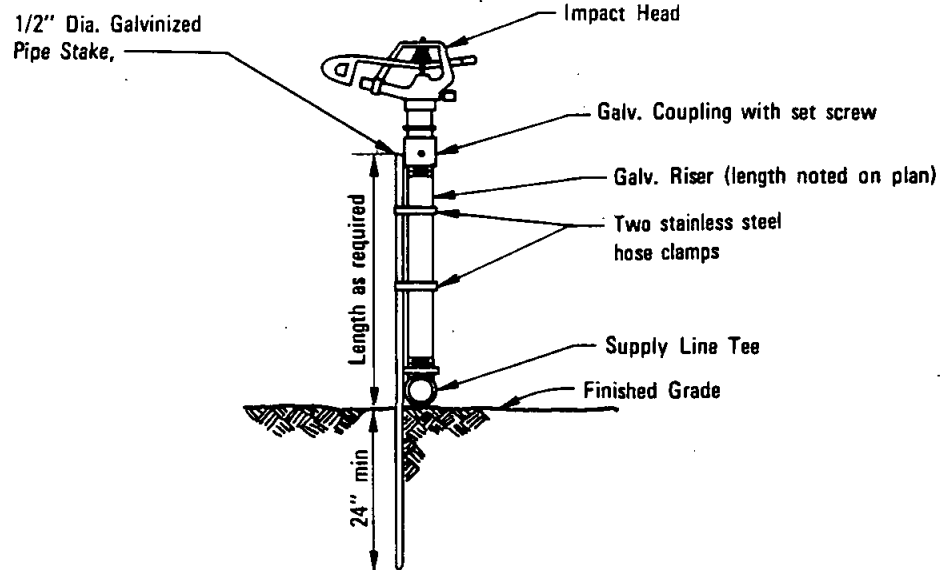
**DRAWING
NUMBER**

I-18

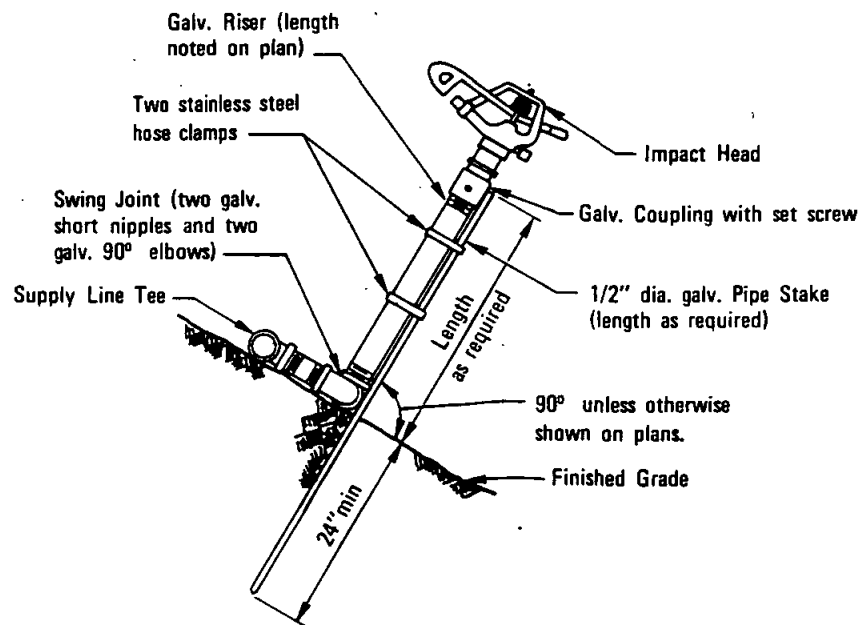
SAN DIEGO REGIONAL STANDARD DRAWING

**IRRIGATION SYSTEMS
ELECTRIC CONTROLLER CLOCK
WALL MOUNTING**

Revision	By	Approved	Date
Note 4	JY	<i>S.K.</i>	5-92



LEVEL INSTALLATION



SLOPE INSTALLATION

LEGEND ON PLANS

Show a number to indicate type head

Revision	By	Approved	Date
Stake	TRP	M.B.	10-82
Clamps	JP	S.D.	5-92

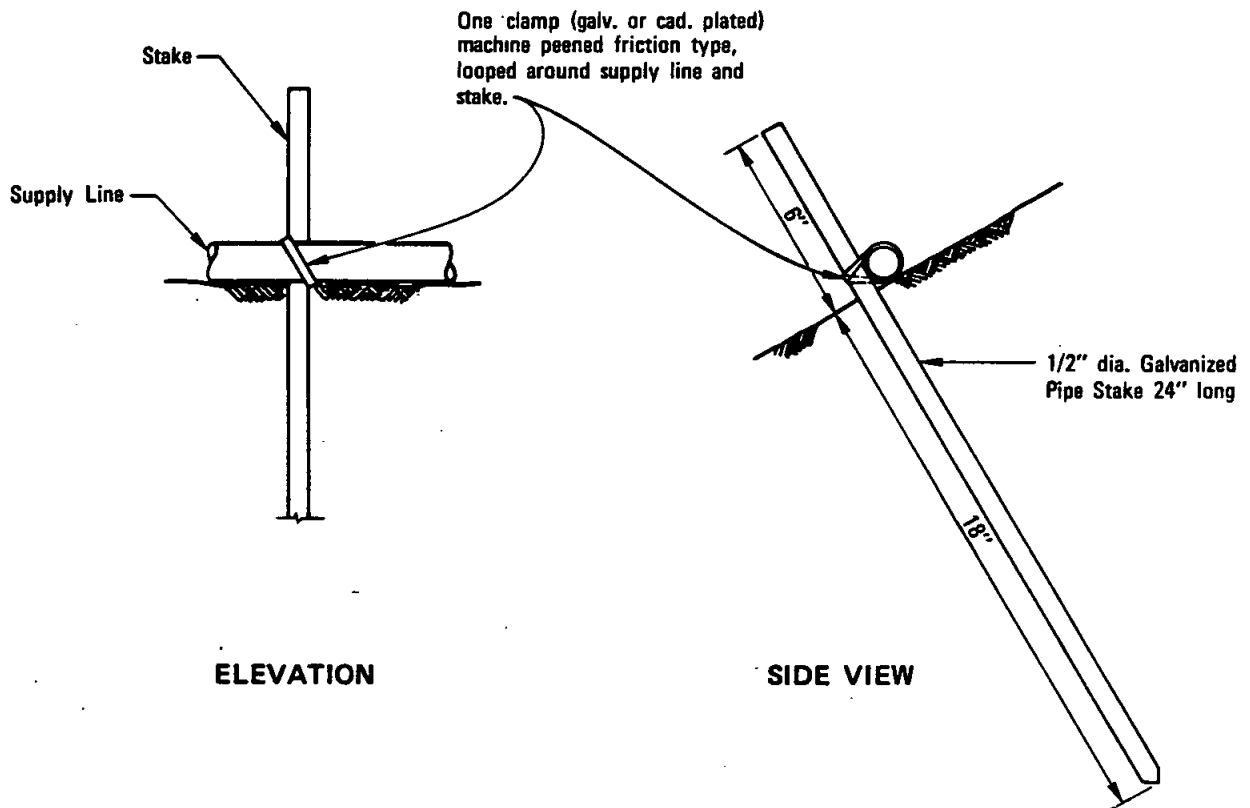
SAN DIEGO REGIONAL STANDARD DRAWING

IMPACT HEAD
ABOVE GROUND PIPE INSTALLATIONS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER I-19



NOTE

Stake shall be placed no greater than 15' apart and at each riser.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred O. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19087 Date

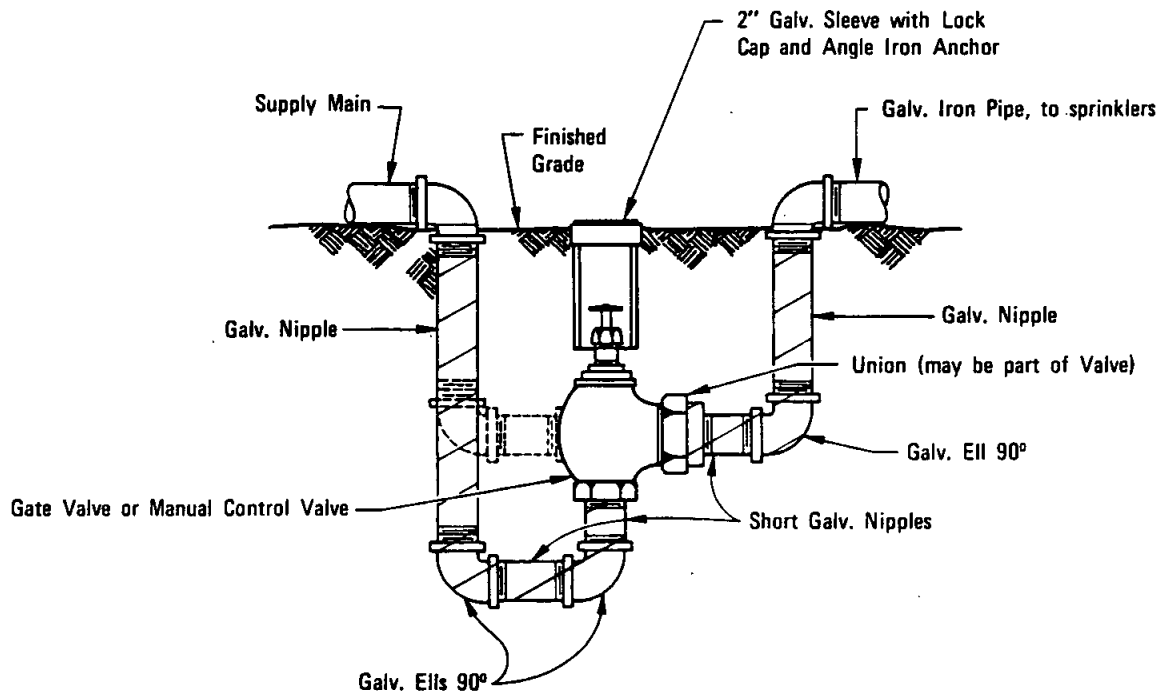
DRAWING
NUMBER

1-20

SAN DIEGO REGIONAL STANDARD DRAWING

PINNING OF PIPE
ABOVE GROUND PIPE INSTALLATIONS

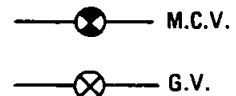
Revision	By	Approved	Date



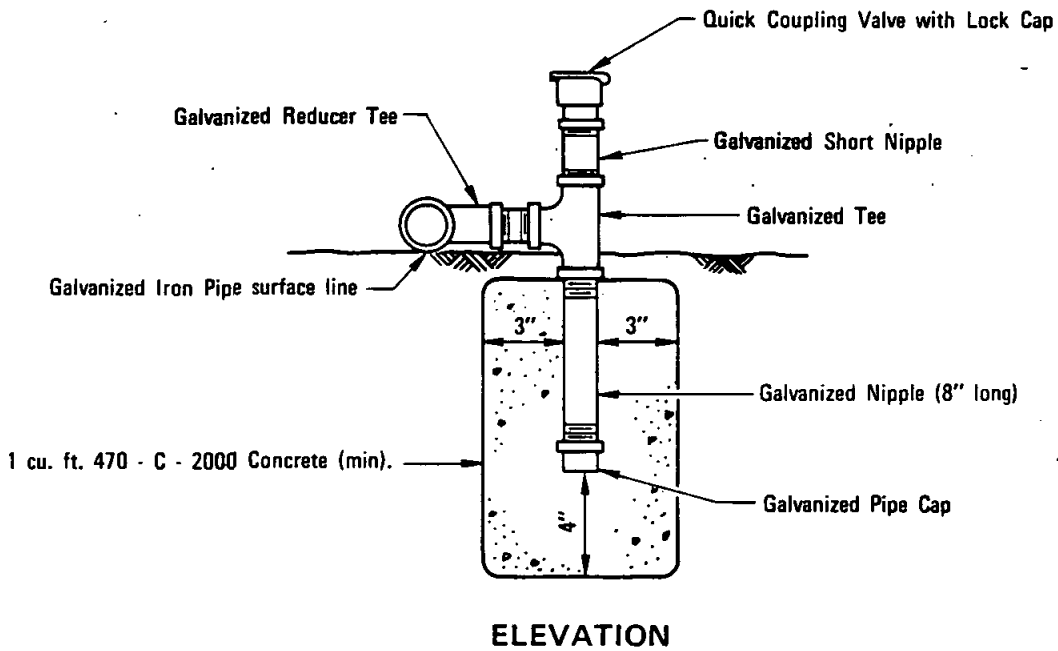
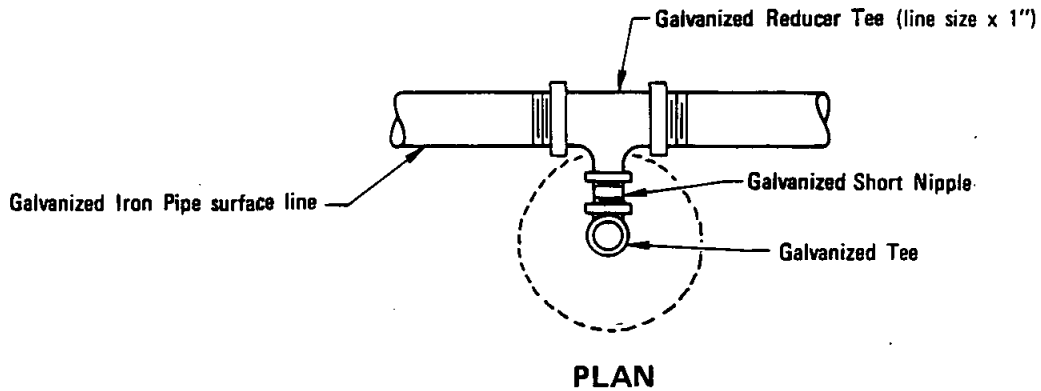
NOTE

All Galvanized Pipe, Nipples and Fittings installed underground shall be wrapped with 2" wide plastic backed adhesive tape, use 1/2" overlap.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Note	36	D.S.	7-79			
				MANUAL CONTROL VALVE AND GATE VALVE INSTALLATION FOR ABOVE GROUND PIPE INSTALLATIONS		<i>Allen A. Kershner</i> Dec. 1975 Coordinator R.C.E. 19807 Date
						DRAWING NUMBER I-21



LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

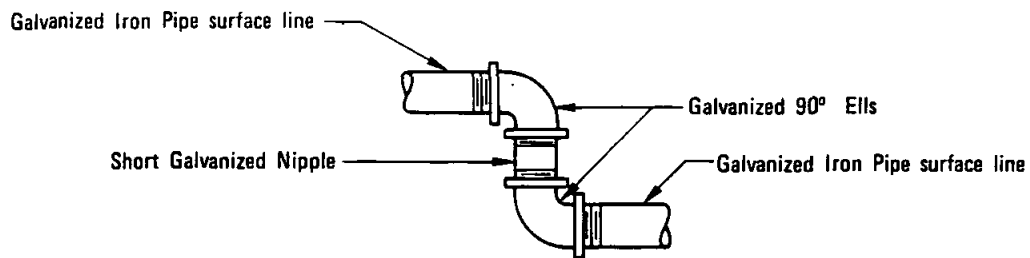
SAN DIEGO REGIONAL STANDARD DRAWING

**QUICK COUPLER ASSEMBLY
ABOVE GROUND PIPE INSTALLATIONS**

Revision	By	Approved	Date

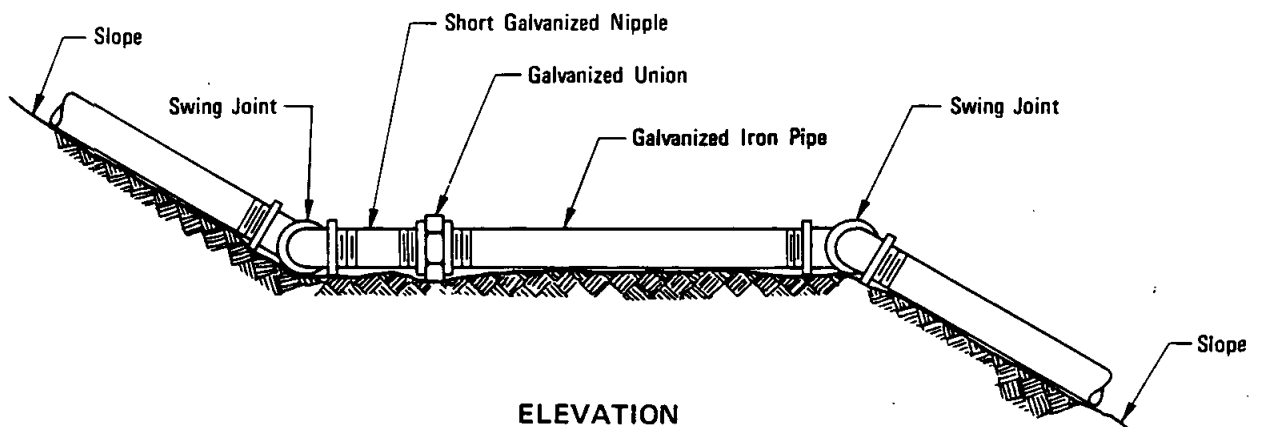
DRAWING
NUMBER

1-22



SWING JOINT DETAIL

PLAN

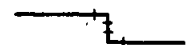


ELEVATION

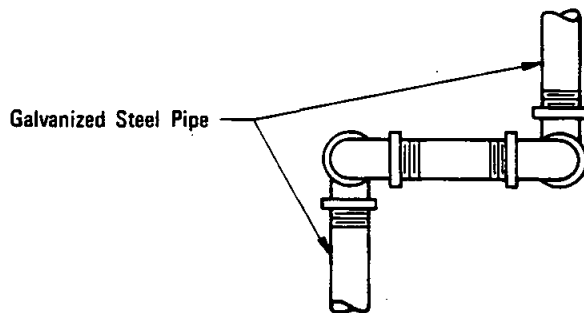
NOTE

Swing Joints shall be used at each change of grade.

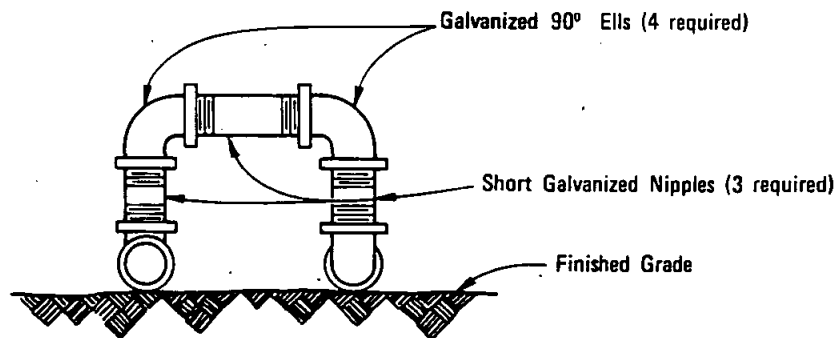
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING SWING JOINT AND PIPE INSTALLATION ON SLOPES ABOVE GROUND PIPE INSTALLATIONS	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Alfred A. Kerschbaum</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	DRAWING NUMBER I-23



PLAN



ELEVATION

NOTES

1. Double swing joint shall be used where changes of grade and alignment occur simultaneously.
2. Double swing joint shall be used for expansion joint on long runs of galvanized pipe.
(300' maximum runs)

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allard A. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

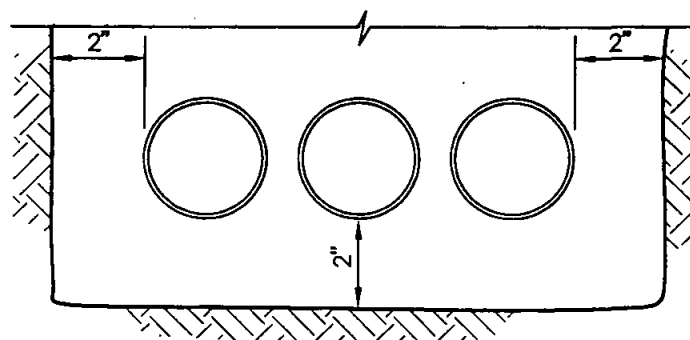
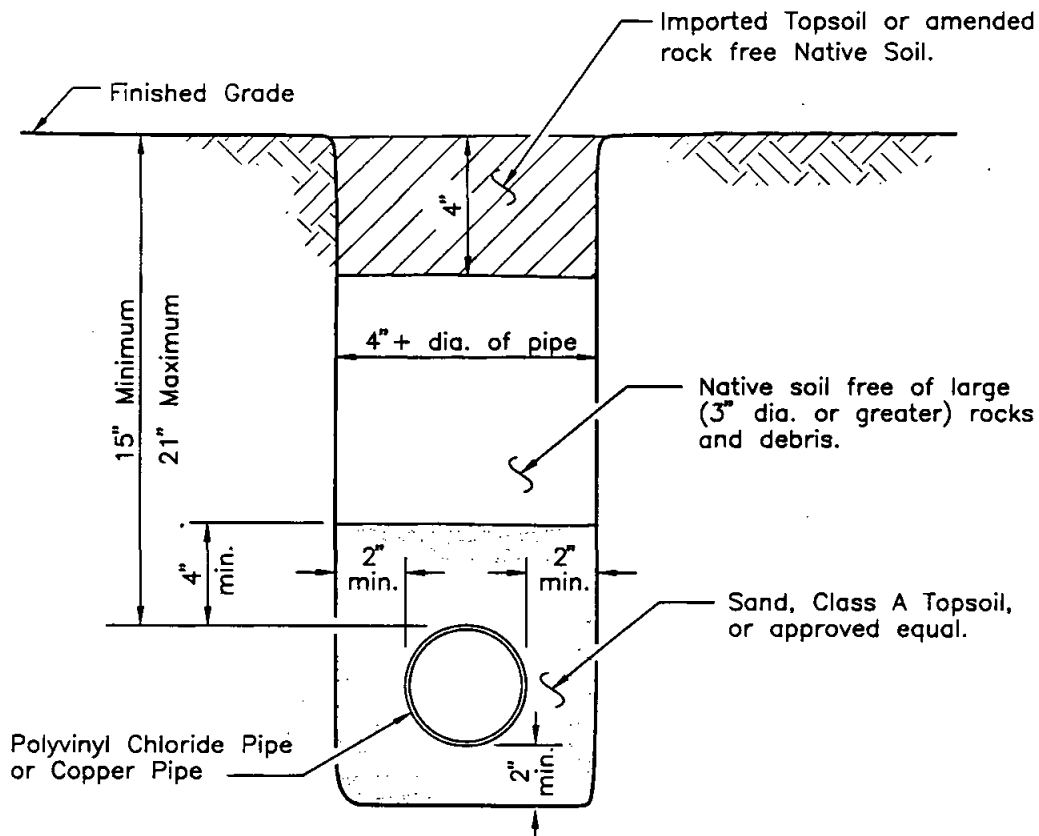
DRAWING
NUMBER

1-24

SAN DIEGO REGIONAL STANDARD DRAWING

**DOUBLE SWING JOINT
ABOVE GROUND PIPE INSTALLATIONS**

Revision	By	Approved	Date




Details not shown are same as above.

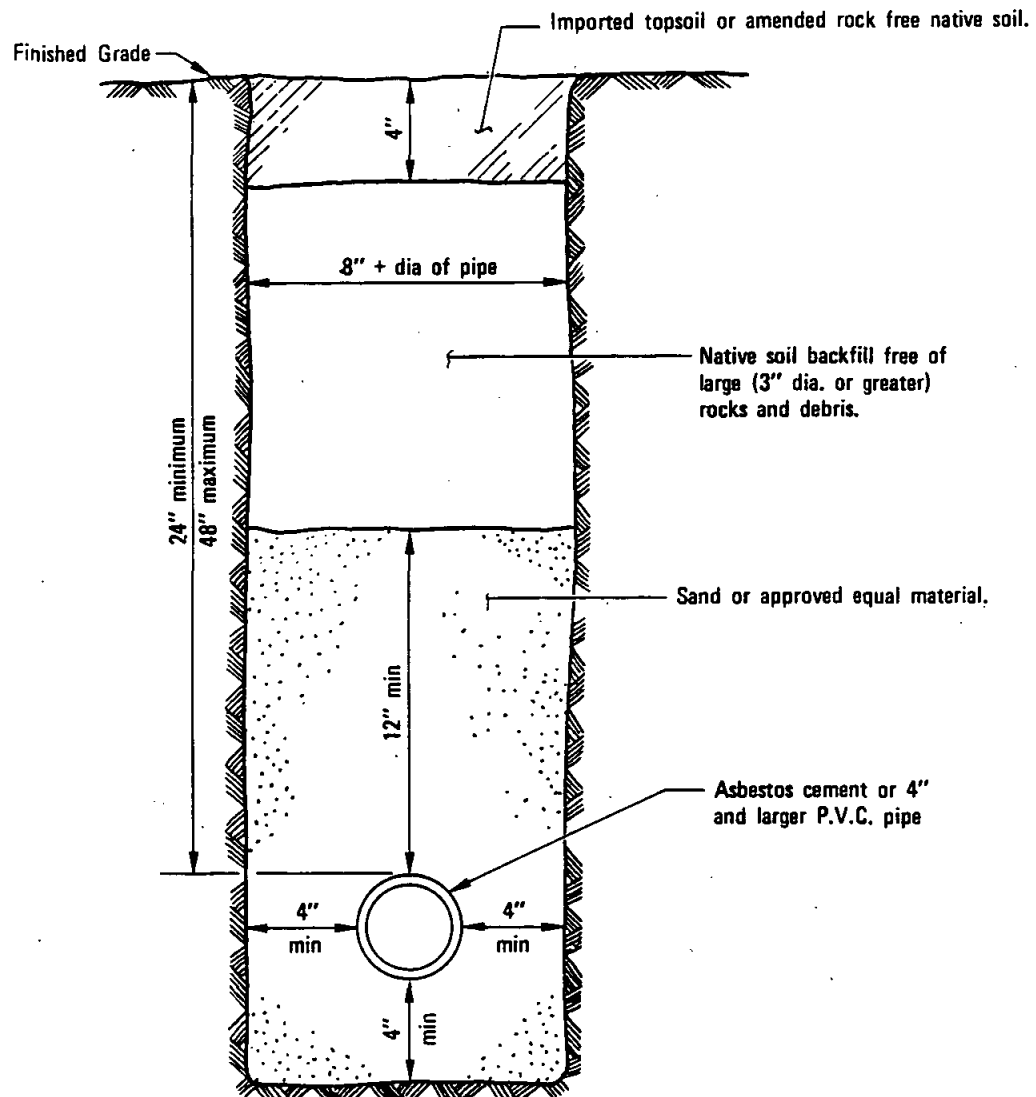
MULTIPLE PIPE INSTALLATION DETAIL

(non-pressure pipe only, see Note 6 for pressure pipe)

NOTES

1. Backfill material shall be compacted to a relative compaction of 90% or more.
2. All P.V.C. pipe shall lay free in the trench with no induced strain and with sufficient allowance for expansion and contraction as recommended by the manufacturer.
3. Teflon tape, 3/4" wide shall be used on all threaded connections.
4. The letter W shall be stamped or chiseled on the improvement (curb-sidewalk) directly above the pressure pipeline.
5. All plastic pipe under pavement shall be installed in a P.V.C. sleeve.
6. Minimum clearance between pressure pipes shall be 2 inches.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
TEXT	ON	Q. No. 2-95	2-95		
				TRENCH DETAIL P.V.C. AND/OR COPPER PIPE (3" AND SMALLER)	 Chairman R.C.E. 25902 Date
					DRAWING NUMBER 1-25



NOTES

1. Backfill material shall be compacted to a relative compaction of 90% or more.
2. All pipeline fittings shall be cast iron, short body, Class 250, cement mortar lined and polyethylene wrapped. All fittings shall have thrust blocks or anchors.
3. The letter W shall be stamped or chiseled on the improvement (curb-sidewalk) directly above the pressure pipeline.
4. No P.V.C. pressure pipeline shall be installed within 3' of any line, unless otherwise specified.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

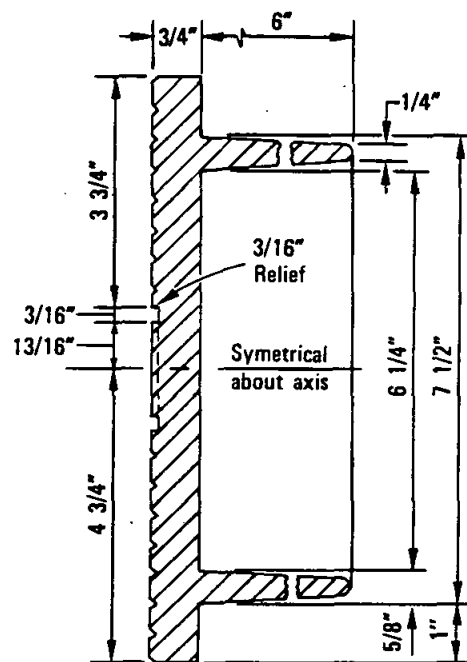
Allan G. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER I-26

SAN DIEGO REGIONAL STANDARD DRAWING

TRENCH DETAIL — ASBESTOS CEMENT PIPE AND 4" AND LARGER P.V.C.

Revision	By	Approved	Date
Title	TRP	M.B.	10-82
Title	SC	U.F.	7-88

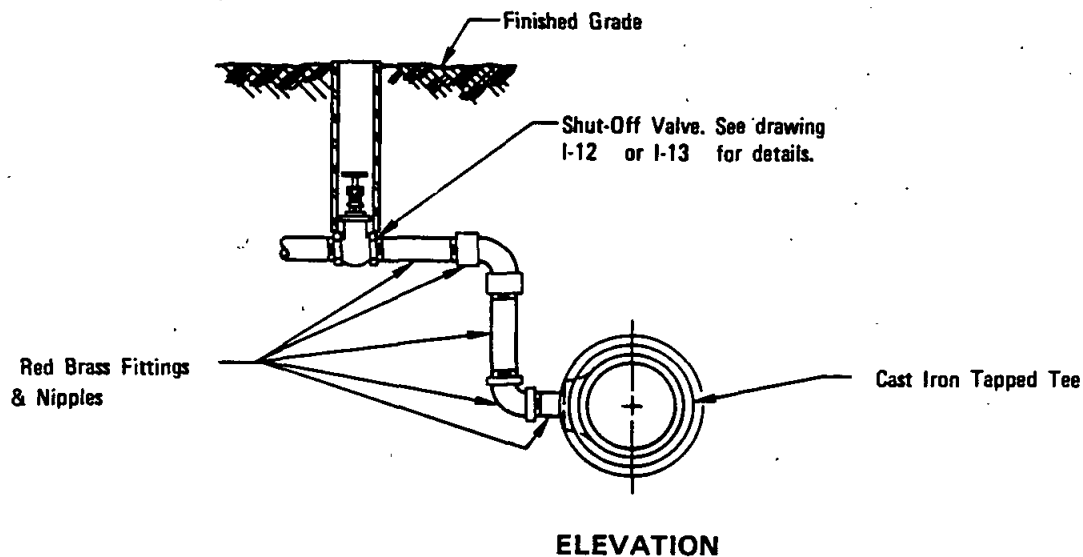
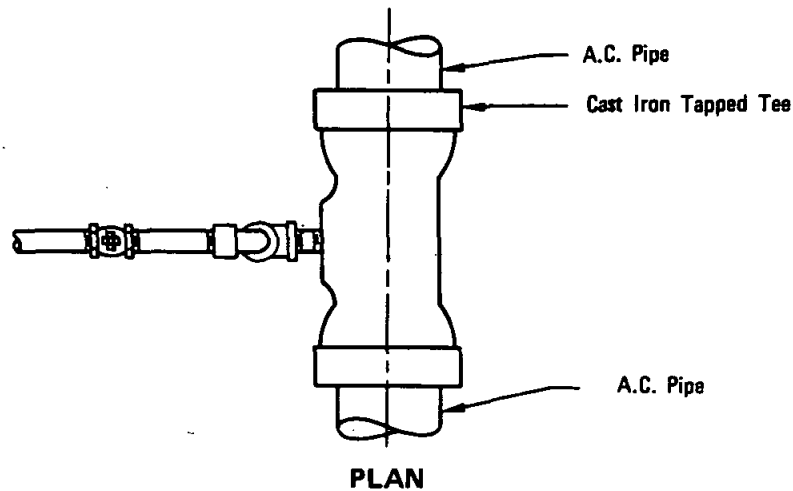


CAST IRON VALVE WELL CAP

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Allen G. Kershner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date
Dimension	<i>2</i>	<i>A.H.</i>	<i>7-88</i>		
				VALVE WELL AND COVER	DRAWING NUMBER 1-27



NOTES

1. Close nipples shall not be used.
2. Cast iron tapped tee shall be short body, class 250, cement mortar lined and polyethylene wrapped.
3. All tapped tees shall have a type - A support block. See Standard Drawing W-19.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

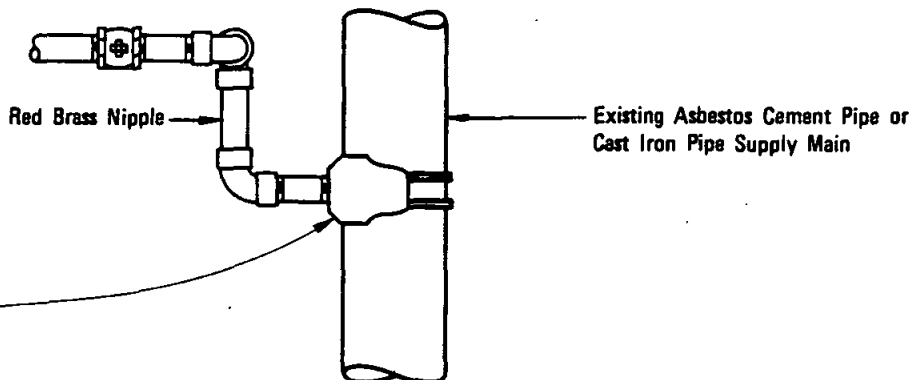
Allen D. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER I-28**

SAN DIEGO REGIONAL STANDARD DRAWING

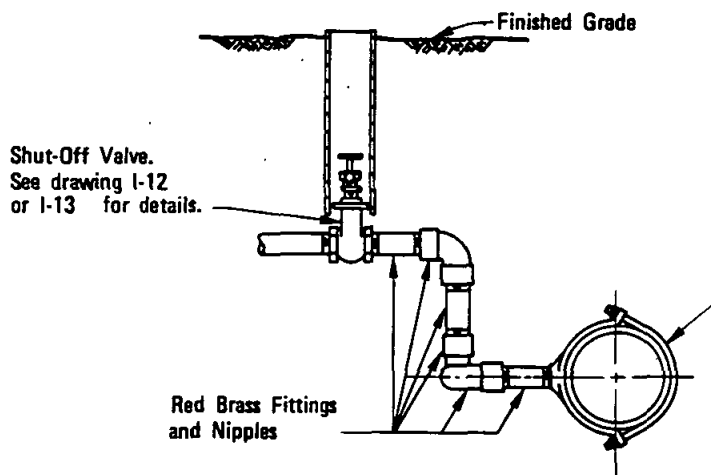
CONNECTION DETAIL FOR NEW ASBESTOS CEMENT SUPPLY MAINS.

Revision	By	Approved	Date
Reference	RF	M.B.	10-82



PLAN

May Be: Bronze, double strap service clamp; cast iron tapped clamp coupling with stainless steel bolts; cast iron boltless tapping sleeve; or cast iron (cement mortar lined) cutting in tapped tee.



ELEVATION

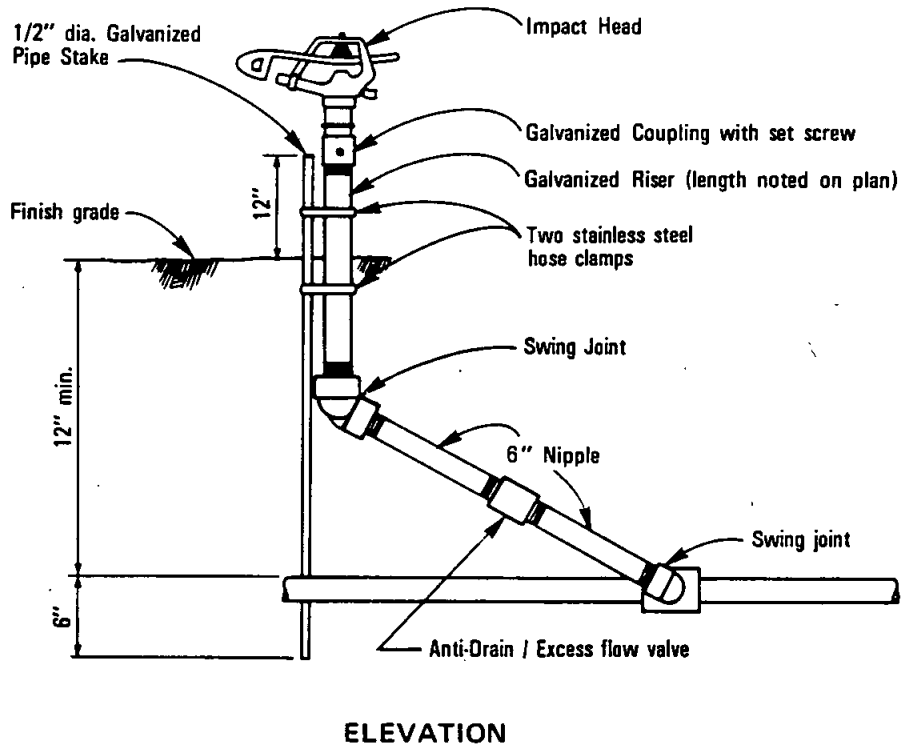
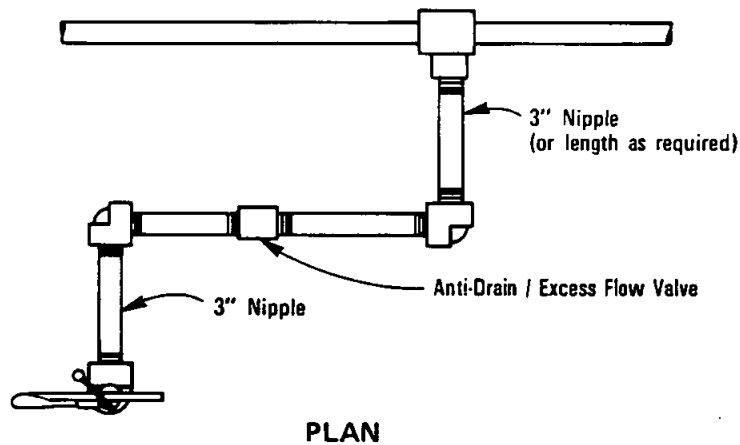
NOTE

Close nipples shall not be used.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE			
Reference	TRP	M. B.	10-82			CONNECTION DETAIL FOR EXISTING SUPPLY MAINS	<i>Allard A. Kershner</i> <i>Dec. 1975</i>	
							Coordinator R.C.E. 19807	Date
					DRAWING NUMBER	I-29		



NOTES

1. All fittings shall be P.V.C. Sch. 40 (except as noted).
2. All nipples shall be P.V.C. Sch. 80 (except as noted).
3. Teflon tape, 3/4" wide, shall be used on all threaded connections.
4. Short nipples shall not be used.

LEGEND ON PLANS

Show a number to
indicate type head

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

David J. Salas July 1979
Coordinator R.C.E. 25291 Date

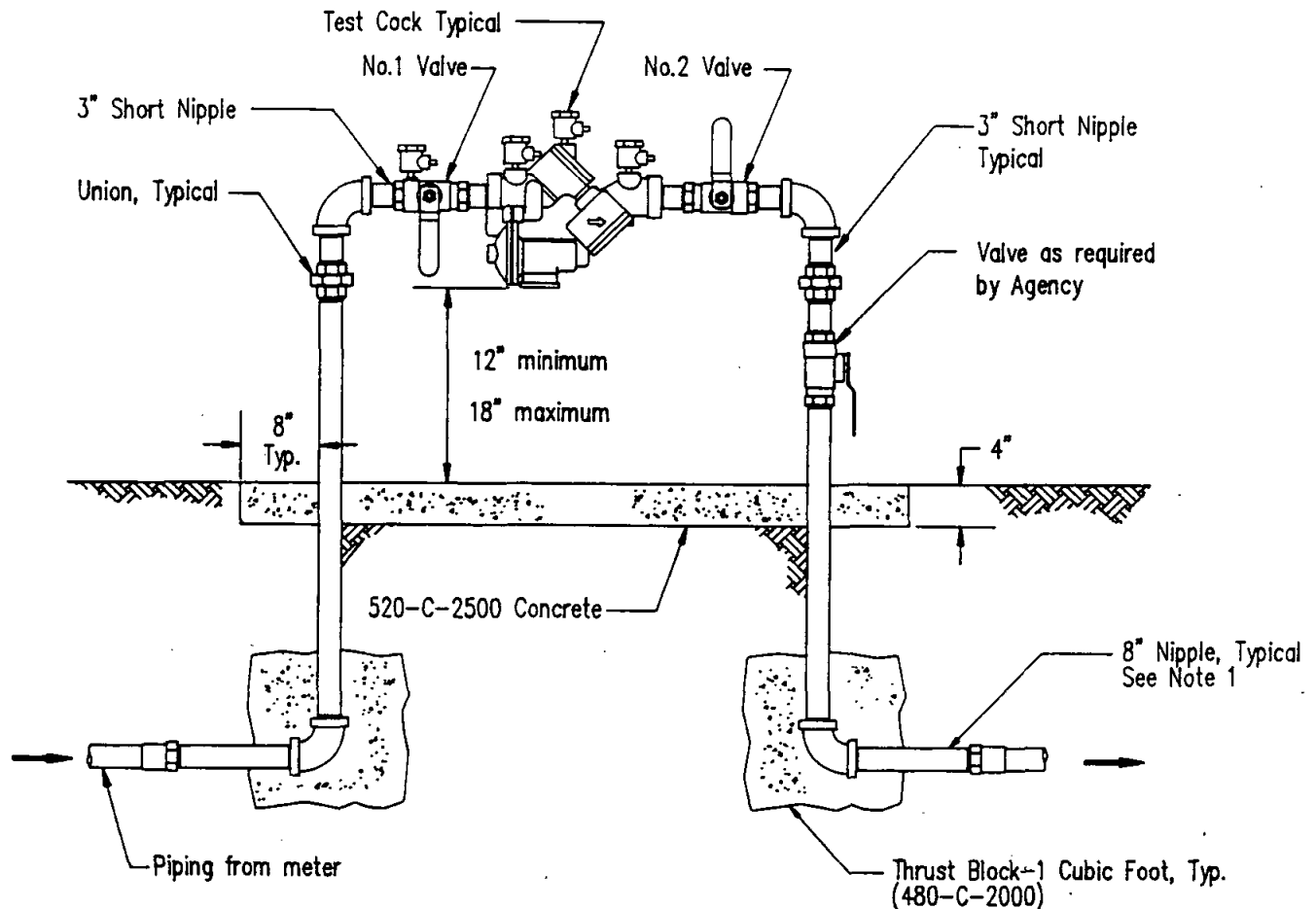
DRAWING
NUMBER

I-30

SAN DIEGO REGIONAL STANDARD DRAWING

IMPACT HEAD (WITH SWING JOINT)

Revision	By	Approved	Date
Notes	JP	<i>[Signature]</i>	5-92



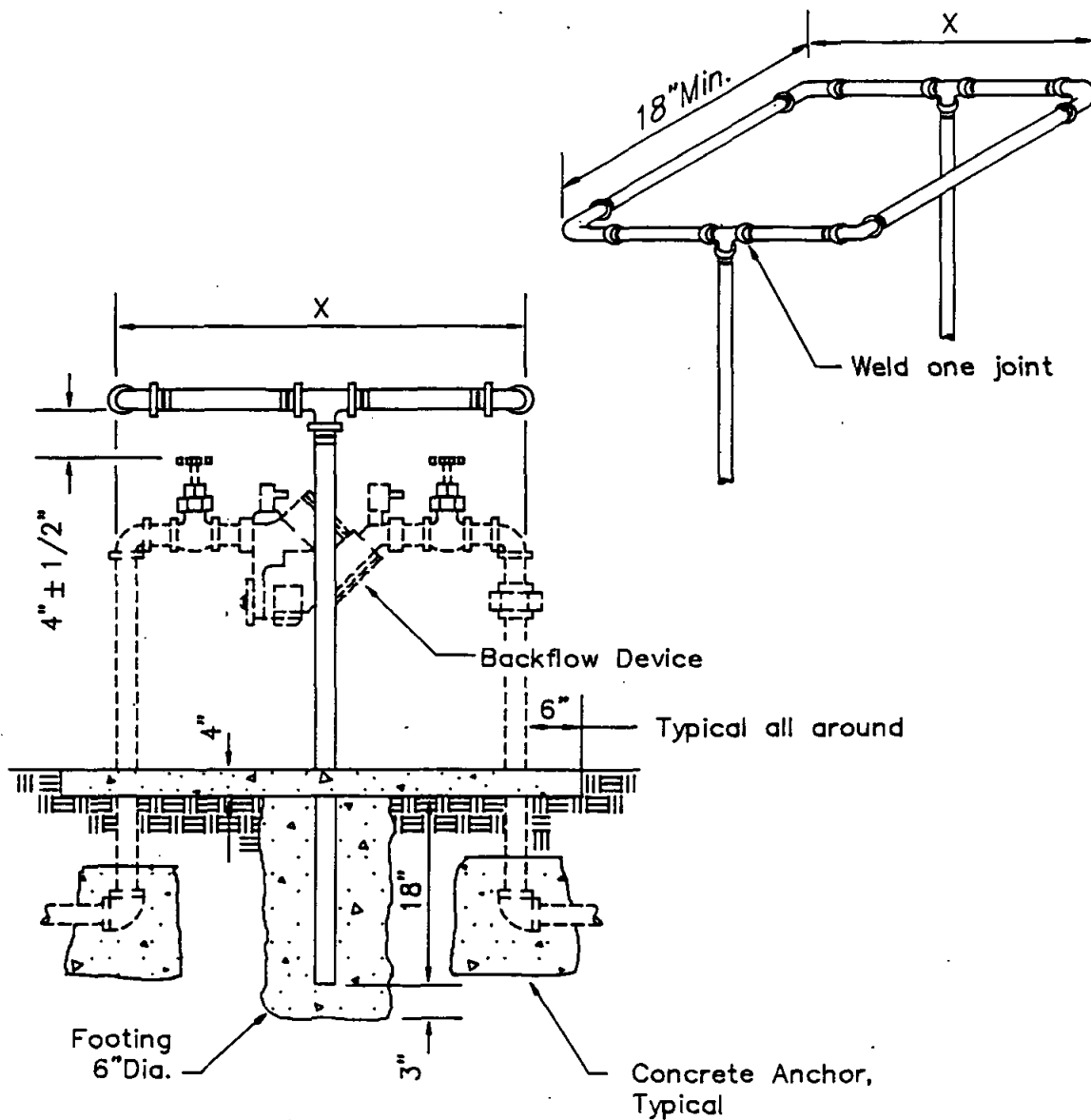
NOTES:

1. All risers, unions, elbows and nipples shall be red brass.
2. Close nipples shall not be used.
3. Teflon tape 3/4" wide shall be used on all threaded connections.
4. Concrete pad shall be 18" wide.
5. Backflow preventer assembly shall be tested upon installation by a certified backflow device tester. Contractor shall provide the Engineer with written test results completed by certified backflow tester prior to the backflow preventor assembly's acceptance by the Engineer.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				BACKFLOW PREVENTER REDUCED PRESSURE PRINCIPLE ASSEMBLY - 2" AND SMALLER		<i>Henry P. ...</i> 5-11-92 Chairman Date RCE25902
				DRAWING NUMBER		I-31



NOTES:

1. All pipes shall be 1 1/2-inch diameter galvanized schedule 40 steel.
2. X dimension shall be sized to accomodate type of backflow device being protected.
3. Paint entire fence with one coat metal primer and two coats of exterior yellow colored enamel.
4. Guard fence shall be centered on backflow device.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

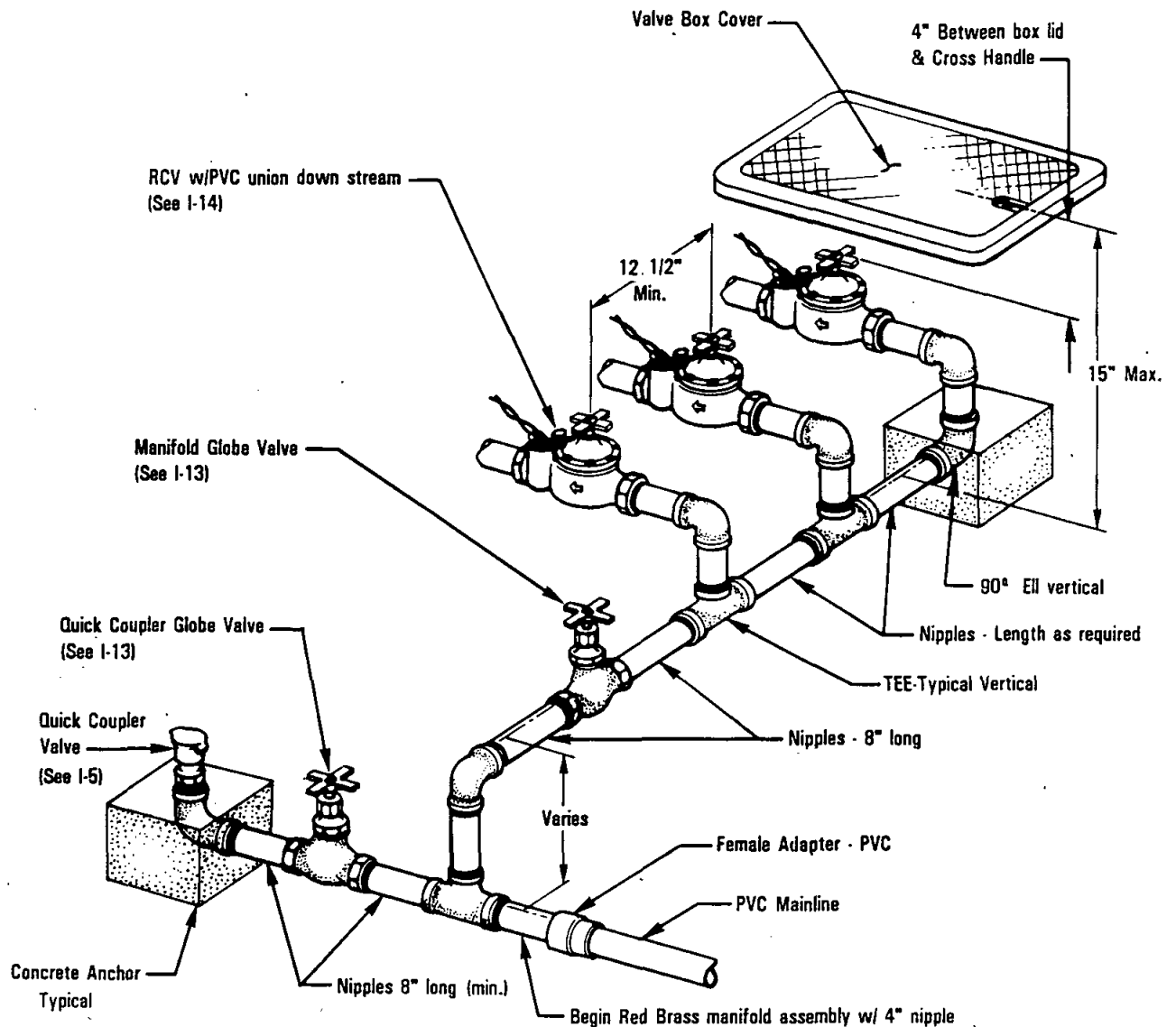
Henry R. Rabin SEPT. 1960
Chairman Date

SAN DIEGO REGIONAL STANDARD DRAWING

PROTECTIVE GUARD FENCE FOR BACKFLOW DEVICE

DRAWING
NUMBER I-32

Revision	By	Approved	Date



NOTES

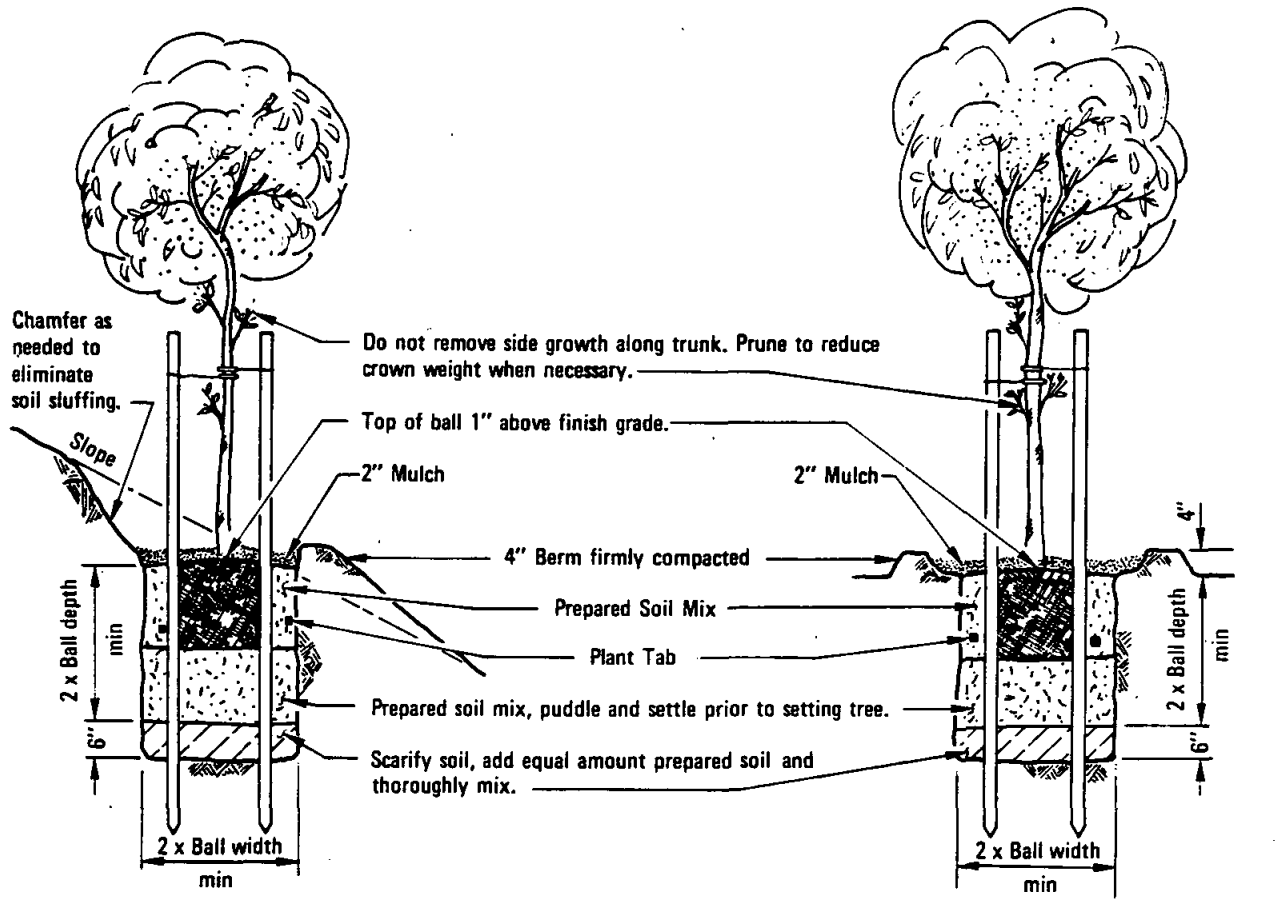
1. Typical remote control valve assembly : All nipples, risers, tees and elbows are to be red brass.
2. Install largest remote control valve adjacent to gate valve and maintain uniform decrease.
3. Close nipples are not allowed.
4. Install individual valve boxes for each remote control valve.
5. Locations of Quick Coupler valves shall be as shown on plans.
6. Tee vertically from Mainline intersection to reach the 15" maximum depth.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				REMOTE CONTROL VALVE MANIFOLD ASSEMBLY	<i>George J. [Signature]</i> 5-11-92 Date RCE 25902
					DRAWING NUMBER 1-33

LANDSCAPING

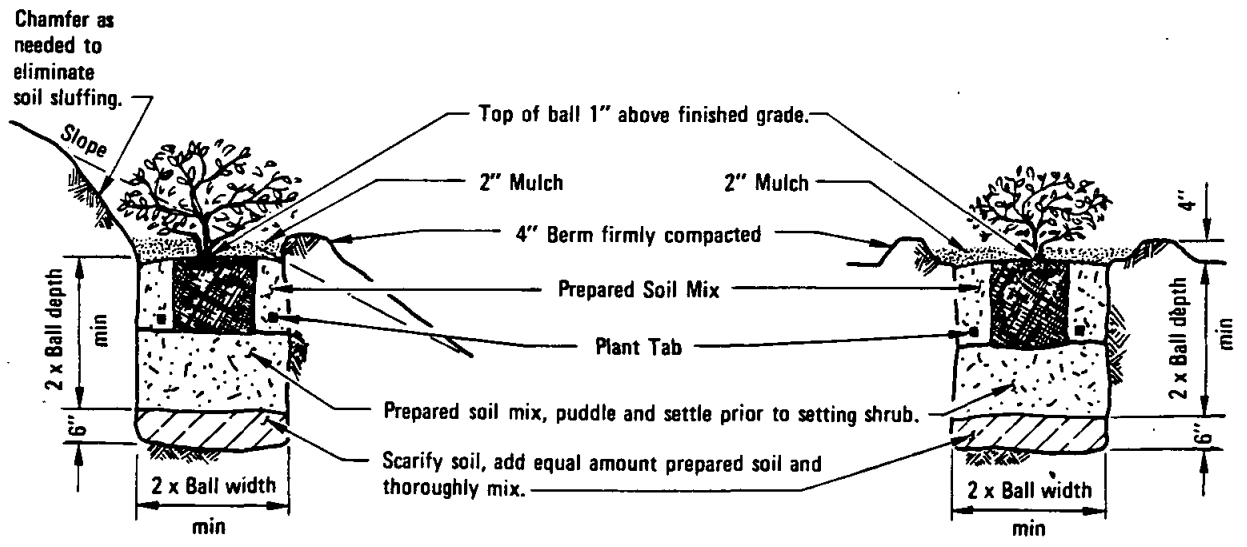
LANDSCAPING





TREE PLANTING - SLOPES

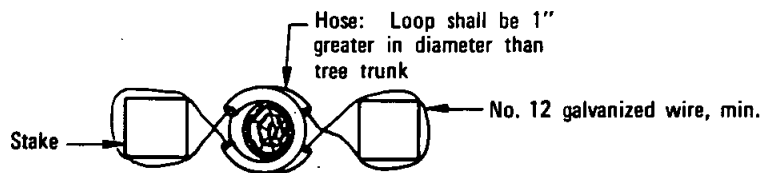
TREE PLANTING - LEVEL GROUND



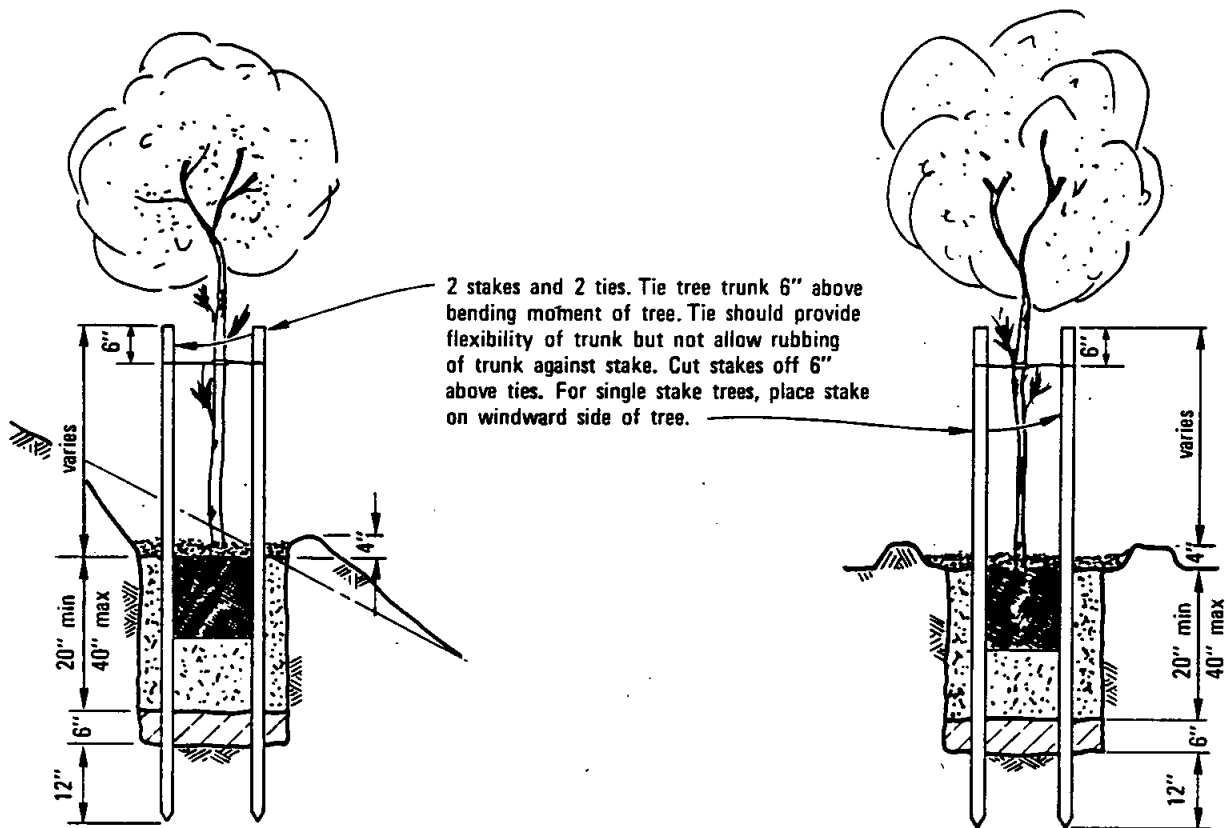
SHRUB PLANTING - SLOPES

SHRUB PLANTING - LEVEL GROUND

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Allan A. Kuehn</i> Dec. 1975 Coordinator R.C.E. 19807 Date
				TREE AND SHRUB PLANTING		DRAWING NUMBER L-1



PLAN



TREE STAKING - SLOPES

TREE STAKING - LEVEL GROUND

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

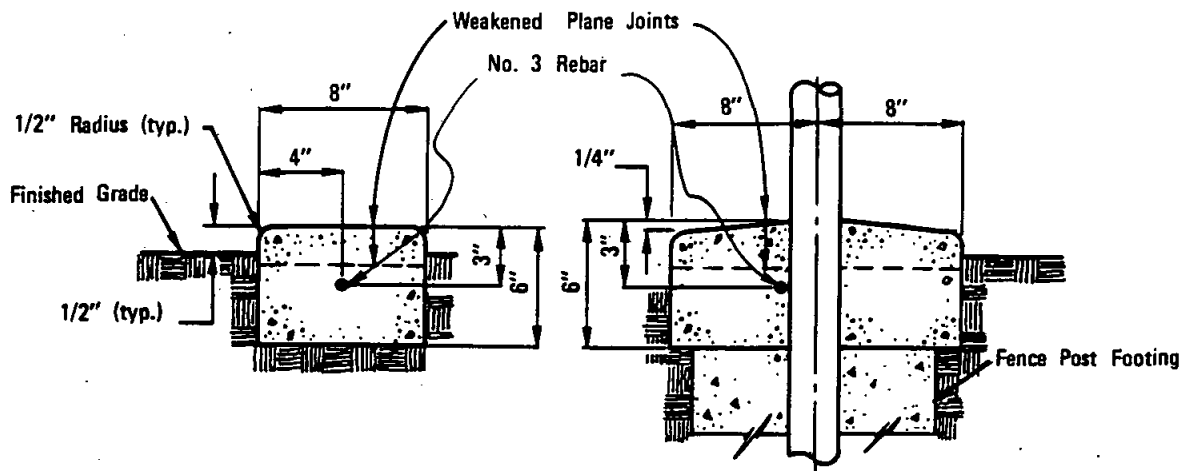
Revision	By	Approved	Date
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Plan	SC	D. S.	7.77
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DRAWING
NUMBER

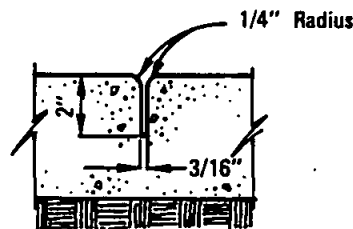
L-2

TREE STAKING

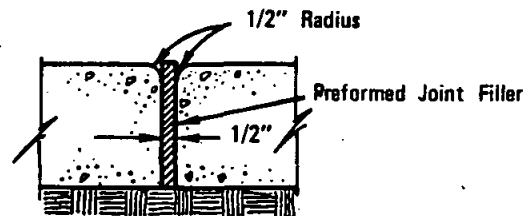


TYPE A
SHRUB AREAS

TYPE B
UNDER FENCES



WEAKENED PLANE JOINT
MAX. 20 FT. O. C.



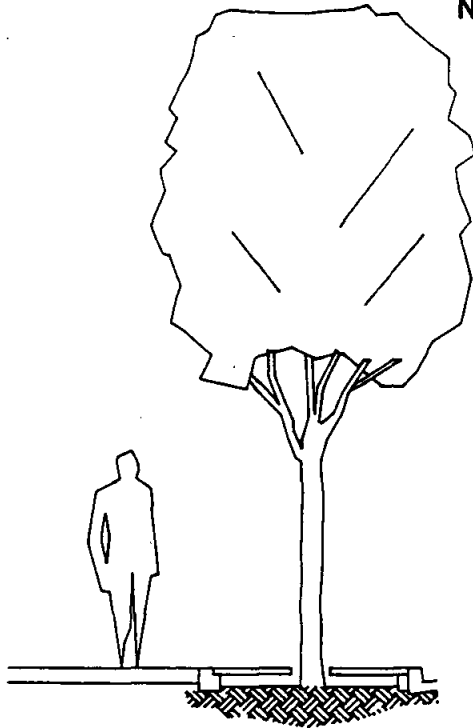
EXPANSION JOINT
MAX. 120 FT. O. C.

NOTES:

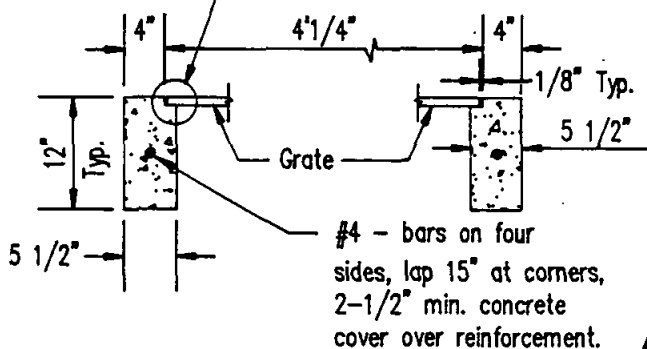
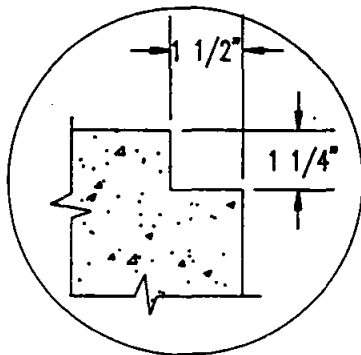
1. Rebar shall be continuous with 12 inch overlap at splices.
2. Concrete shall be class 520-C-2500 and same color as any adjacent concrete.
3. Install weakened plane joints at each fence post.
4. Install expansion joints where the mowing strip abuts any concrete improvement.

Revision		Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Conc.	2	M.B.	5-86			Chairman <i>R. Holt</i> Oct 1982 P.H.C.E. C13768 Date	
				CONCRETE MOWING STRIP		DRAWING NUMBER L-3	

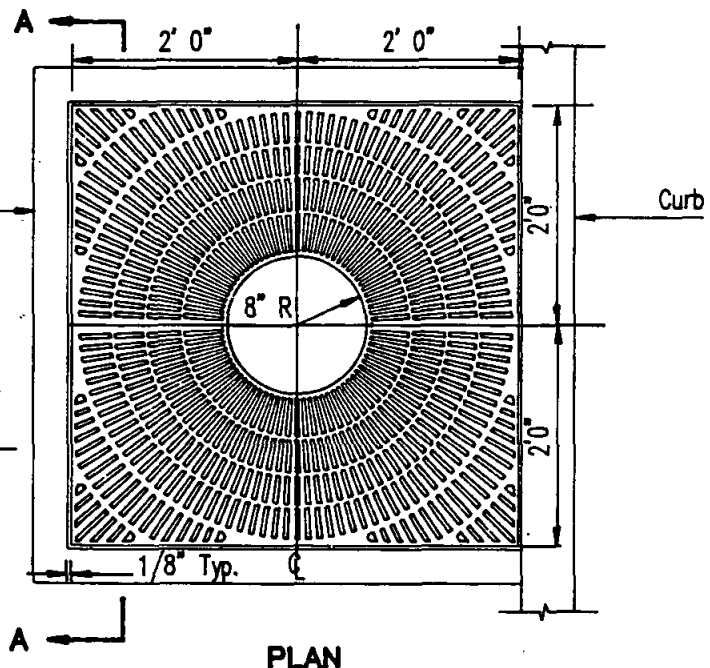
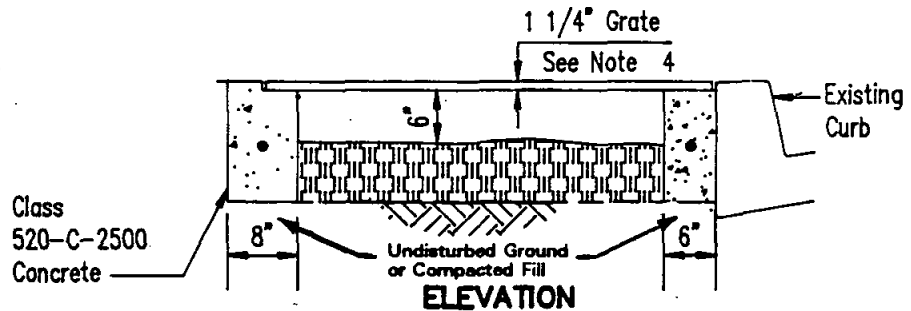
- NOTES:**
1. The location and species of each tree shall have prior approval of the Agency.
 2. Sidewalk to be removed for each tree planting shall be saw cut full depth.
 3. Fill below grate with $3/4"$ x No.4 clean crushed rock. If the grate is used for security, all bolts, nuts and washers shall be hot dipped galvanized. All steel items shall be hot dipped galvanized after fabrication.
 4. Grate shall be two separate pieces, $2' \times 4'$ in size, unless otherwise specified on the plans. Slot openings in grate design shall have $3/8"$ maximum width. Grates are to be designed in accordance with the latest edition of the Uniform Building Code, with a minimum uniform live load of 250 pounds per square foot in sidewalks, and have a method of symmetrical interior expandable rings/openings (detailed on the plans) as selected and approved by the agency.
 5. Immediate notification shall be given to the Engineer of any below grade improvements encountered.



TREE SIZE



SECTION A-A



PLAN

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

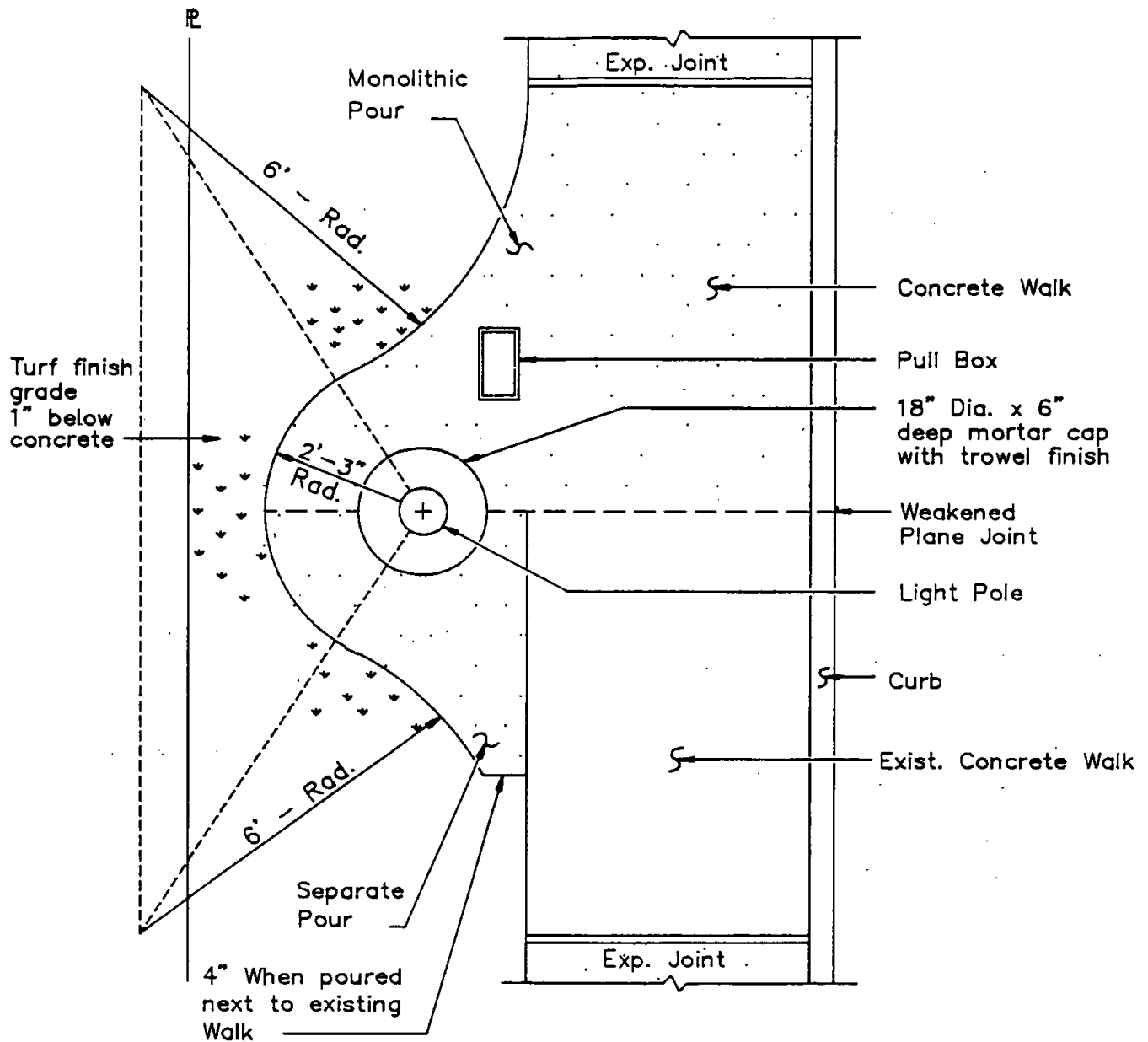
Larry J. Anderson 5-11-98
Chairman *REASPER* Date

DRAWING
NUMBER **L-4**

SAN DIEGO REGIONAL STANDARD DRAWING

**STEEL GRATE
TREE WELL COVER**

Revision	By	Approved	Date



NOTES:

1. See Electric Plans for fixture/pole/footing details.
2. Use monolithic pour for new construction.
3. Poles shall be 6'-0" from face of curb, where applicable.
4. Pole pads shall drain at 2% minimum in same direction as sidewalk.
5. Concrete for pad shall be the same as specified for sidewalk.

Revision	By	Approved	Date

SAN DIEGO REGIONAL STANDARD DRAWING

LIGHT POLE PAD IN TURF AREAS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

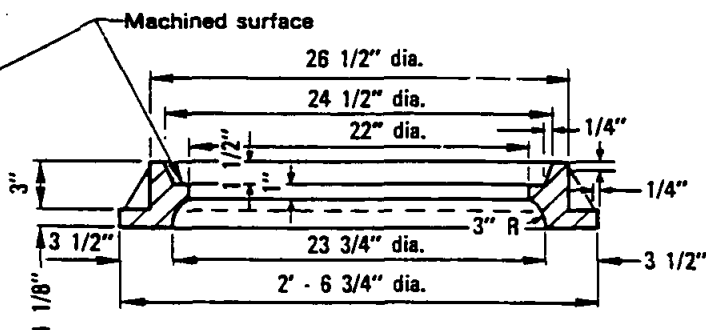
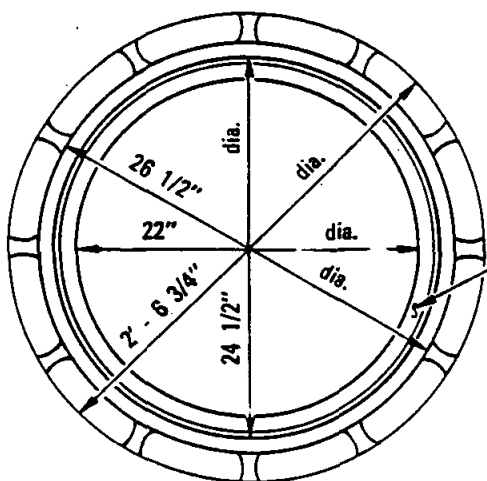
George Robinson 5 SEP 1988
Chairman Date

DRAWING
NUMBER L-5

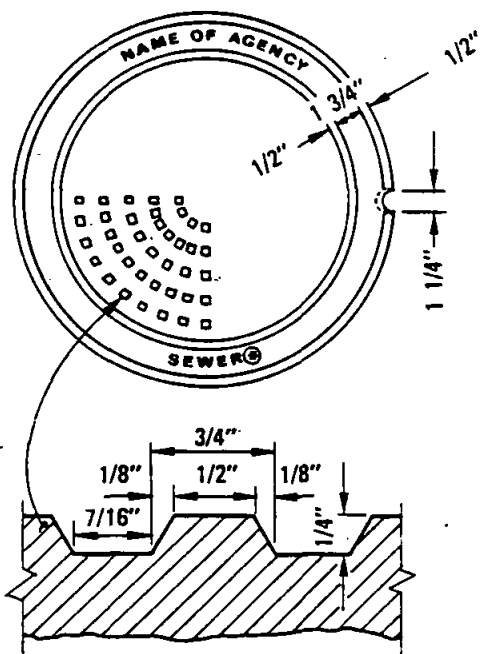
MISCELLANEOUS

MISCELLANEOUS

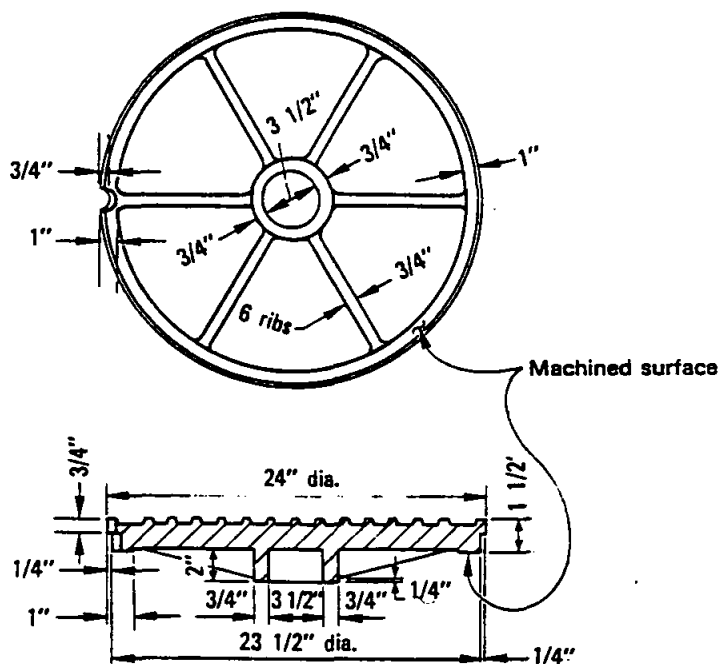
M



MANHOLE COVER FRAME



DETAIL



MANHOLE COVER

NOTES:

1. Frame and cover shall be cast iron. Cast iron shall conform to ASTM 48, Class 35B.
2. Weights: Frame 166 - 193 lbs.
Cover 147 - 171 lbs.
3. Machine all matching surfaces and seats of frame and cover to prevent rocking.
4. Imported frames and covers shall have the country of origin marked in compliance with federal regulations.

FOR	MARK
Sewer Projects	Sewer
Storm Drain Projects	Storm Drain
Water Projects	Water

Revision	By	Approved	Date
Note 3	SC	A.A.	7-88
Note #2	DM	A. Mohr	2-95

SAN DIEGO REGIONAL STANDARD DRAWING

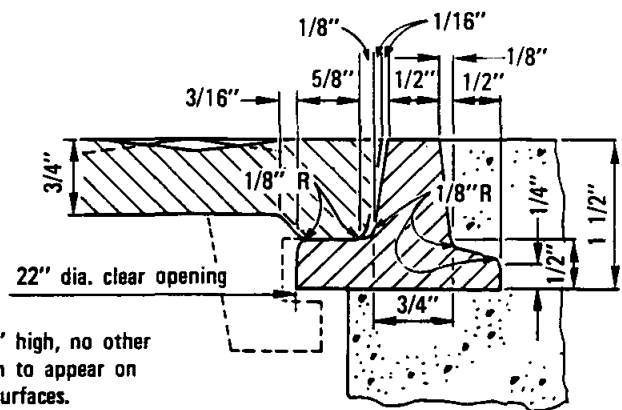
24" MANHOLE FRAME AND COVER
HEAVY DUTY

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

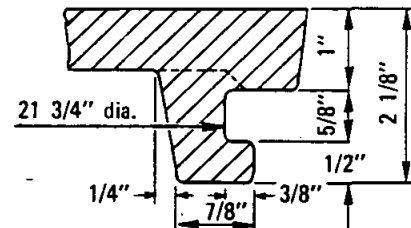
Allen G. Kneeland Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

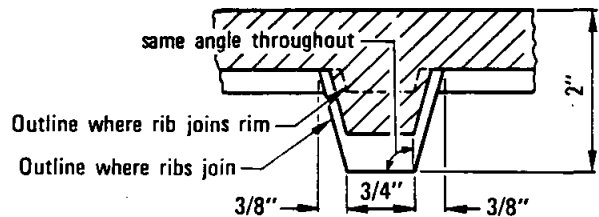
M-1



SECTION THROUGH RIM



SECTION THROUGH LUG



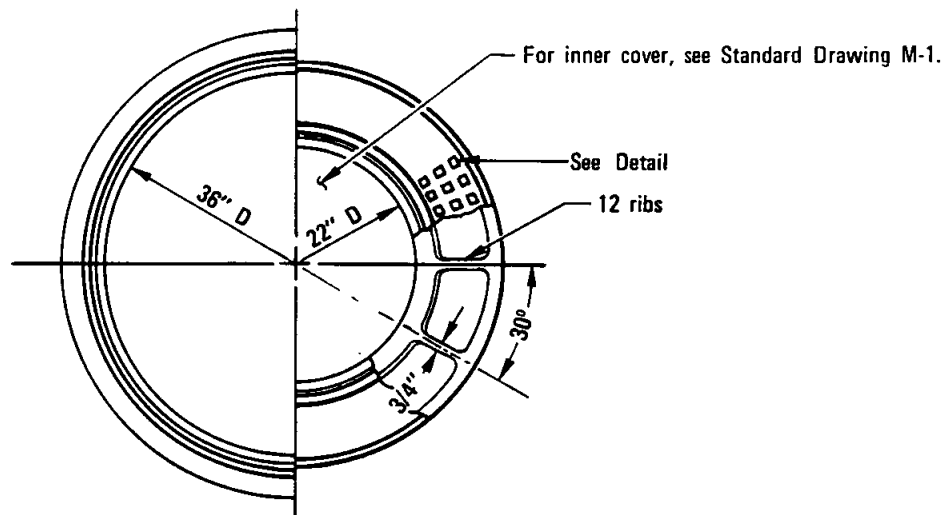
BOTTOM OF COVER

1. Frame and cover shall be cast iron. Cast iron shall conform to ASTM 48, Class 30.
2. Frame and cover for use in non-traffic area only.
3. Weights: Frame 29 - 33 lbs.
 Cover 95 - 110 lbs.
4. Imported frames and covers shall have the country of origin marked in compliance with federal regulations.

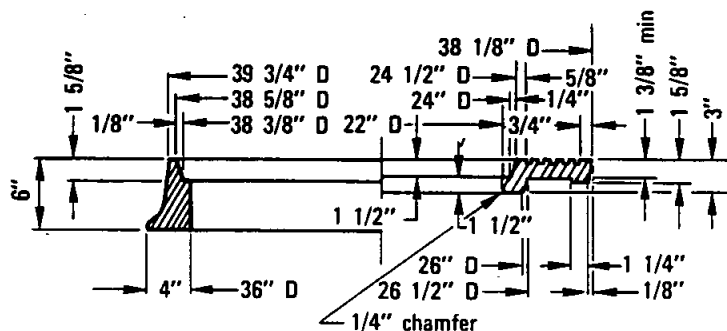
FOR	MARK
Sewer Projects	Sewer
Storm Drain Projects	Storm Drain
Water Projects	Water

24" MANHOLE FRAME AND COVER LIGHT DUTY

Revision	By	Approved	Date
Note 4	SC	A.A.	7/88
Note #3	OM	O. Moheitz	2/95



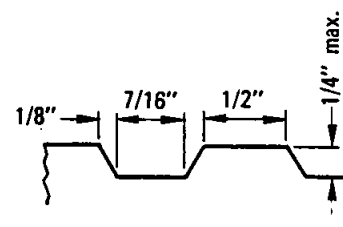
HALF PLAN FRAME & COVER



HALF SECTION FRAME & COVER

NOTES:

1. Frame and cover shall be cast iron. Cast iron shall conform to ASTM 48, Class 35B.
2. Weights: Frame 314 - 363 lbs.
outer Cover 285 - 330 lbs.
Inner Cover 147 - 171 lbs.
3. Machine all matching surfaces and seats of frame and cover to prevent rocking.
4. Imported frames and covers shall have the country of origin marked in compliance with federal regulations.



DETAIL

Revision	By	Approved	Date
Note 5	RC	G.H.	7-88
Note #1	DM	D. Mohr	2-95

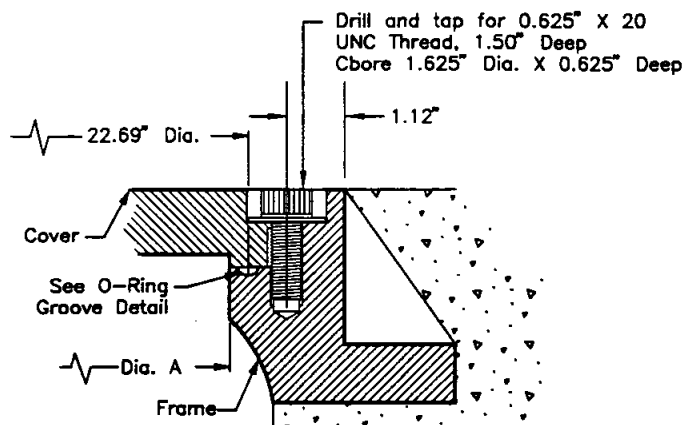
SAN DIEGO REGIONAL STANDARD DRAWING

36" MANHOLE FRAME AND
TWO CONCENTRIC COVERS
HEAVY DUTY

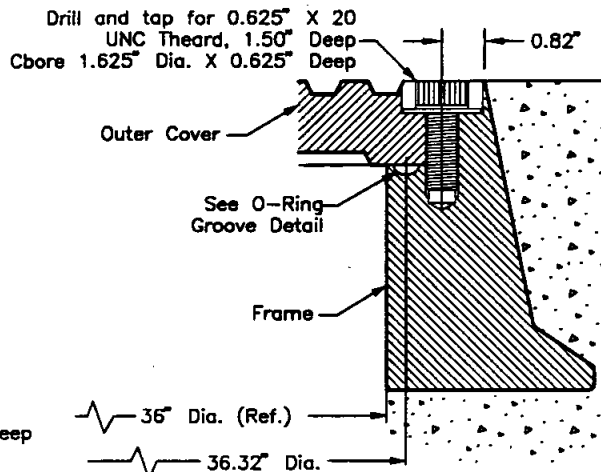
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehnle Dec. 1975
Coordinator R.C.E. 19807 Date

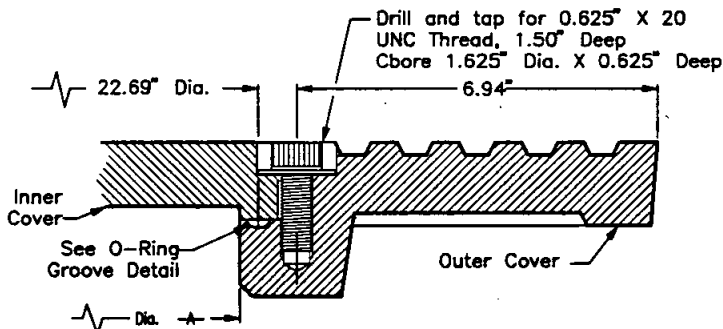
DRAWING
NUMBER M-3



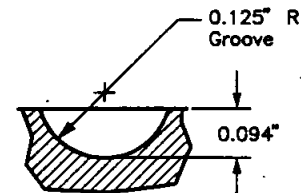
M-1 Detail:
COVER TO FRAME



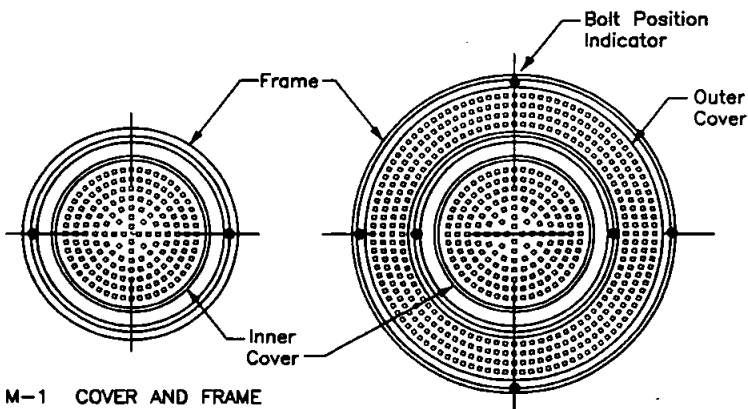
M-3B Detail:
OUTER COVER TO FRAME



M-3A Detail:
INNER COVER TO OUTER COVER



NEOPRENE O-RING
GROOVE DETAIL



M-1 COVER AND FRAME
BOLT PLACEMENT
(See Note 3)

M-3 CONCENTRIC COVERS AND FRAME
BOLT PLACEMENT
(See Note 3)

NOTES:

- 0.625" X 20 UNC THREAD, 316 STAINLESS STEEL SOCKET HEAD CAP SCREW AND 1.50" O.D. X 0.687" I.D. X 0.078 THICK 316 STAINLESS STEEL WASHER.
- 0.25" NEOPRENE O-RING GASKET SHALL BE GLUED INTO MACHINED GROOVE. GLUE SHALL MEET THE REQUIREMENTS OF MIL-M-81288 (AMEND. 1)
- BOLTDOWN PATTERNS:
 - M-1 DETAIL (24" COVER & FRAME):
INSTALL TWO (2) BOLTS AT 180 DEGREES.
 - M-3A DETAIL (CONCENTRIC COVERS):
BETWEEN INNER AND OUTER COVERS INSTALL TWO (2) BOLTS AT 180 DEGREES.
 - M-3B DETAIL (OUTER COVER & FRAME):
BETWEEN OUTER COVER & FRAME INSTALL FOUR (4) BOLTS AT 90 DEGREES.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARD DRAWING COMMITTEE

Long Rubin 2-95
Chairman R.C.E. 25902 Date

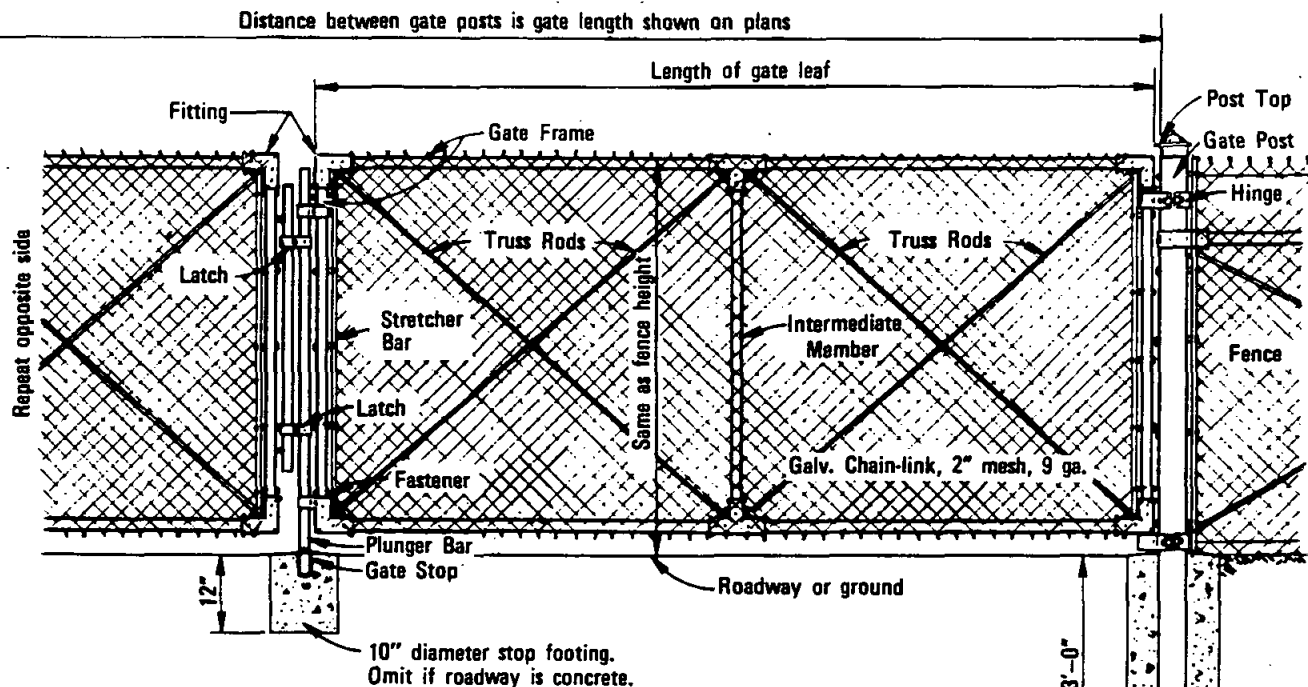
SAN DIEGO REGIONAL STANDARD DRAWING

MANHOLE COVER
LOCKING DEVICE

DRAWING
NUMBER

M-4

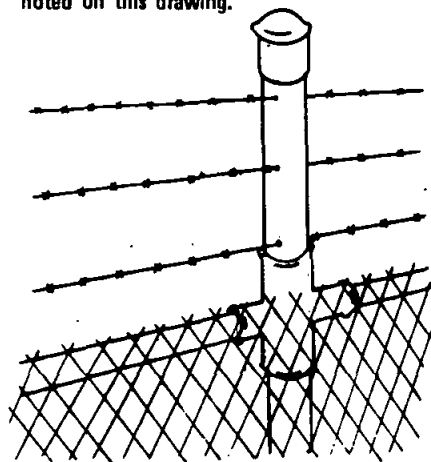
Revision	By	Approved	Date
New Dwg	OR	RLM	2/95



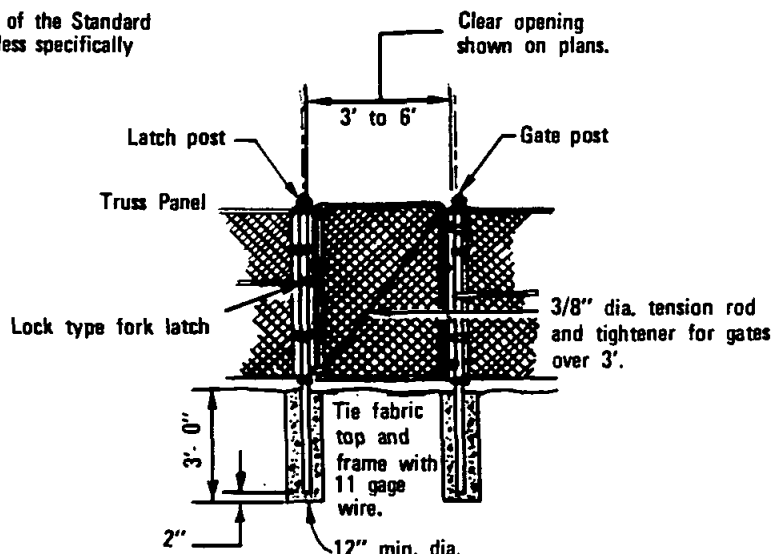
HALF ELEVATION DOUBLE SWING GATE

NOTES

1. All footings shall be 520-C-2500 concrete.
2. The following items shall be furnished and installed only when shown on the plans and/or called for in the special provisions:
 - a. Barbed wire
 - b. Extension post
3. Chain link fence shall conform to Section 206-6 of the Standard Specifications for Public Works Construction unless specifically noted on this drawing.



EXTENSION POST AND BARBED WIRE



WALK GATE

LEGEND ON PLANS



Revision	By	Approved	Date
Walk gate	MA	M.B.	10-82
Conc.	S	M.B.	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

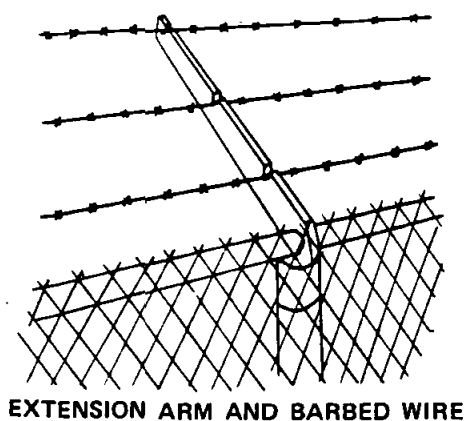
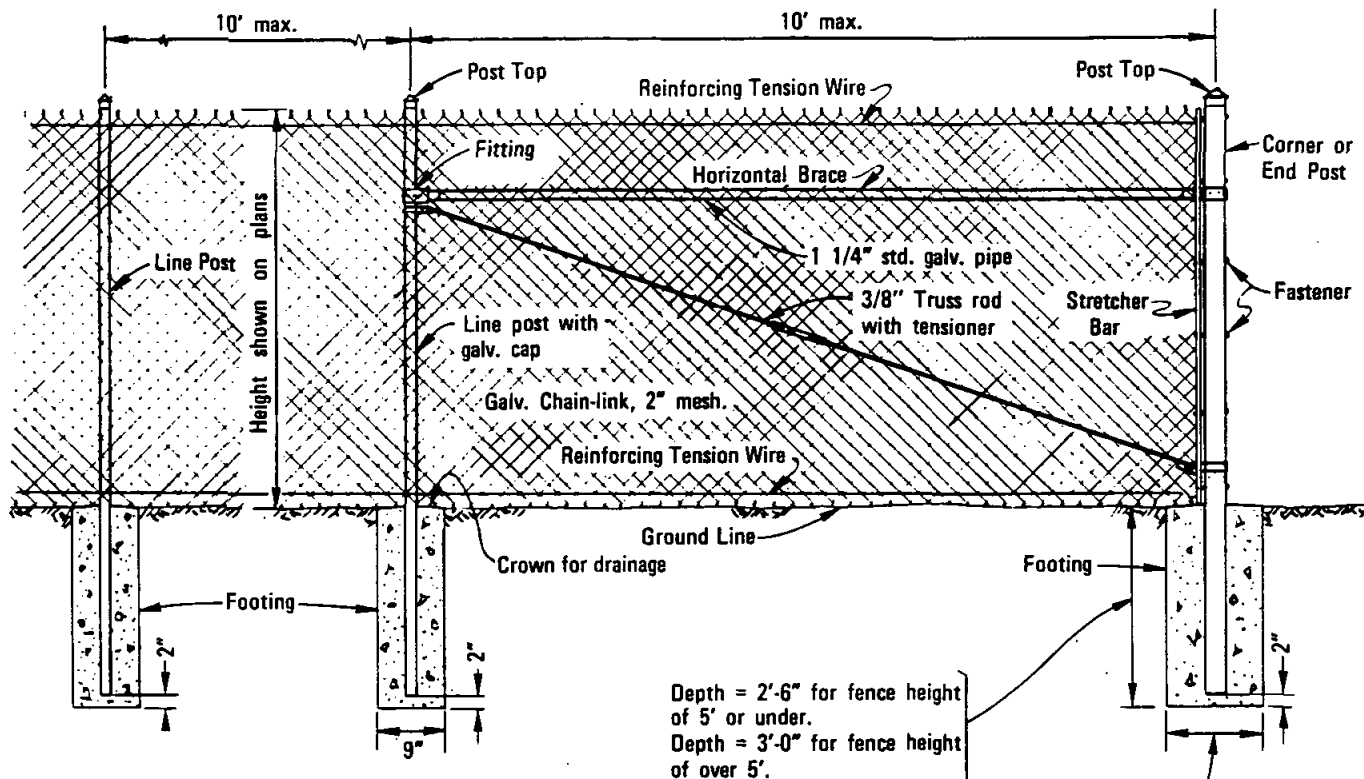
CHAIN LINK GATE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

M-5



NOTES

1. All footings shall be 520-C-2500 concrete.
2. The following items shall be furnished and installed only when shown on the plans and/or called for in the special provisions:
 - a. Barbed Wire
 - b. Extension Arm
 - c. Top Horizontal Rail
3. Chain link fence shall conform to Section 206-6 of the Standard Specifications for Public Works Construction unless specifically noted on this drawing.
4. See Standard Drawing M-20 for additional details.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen O. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

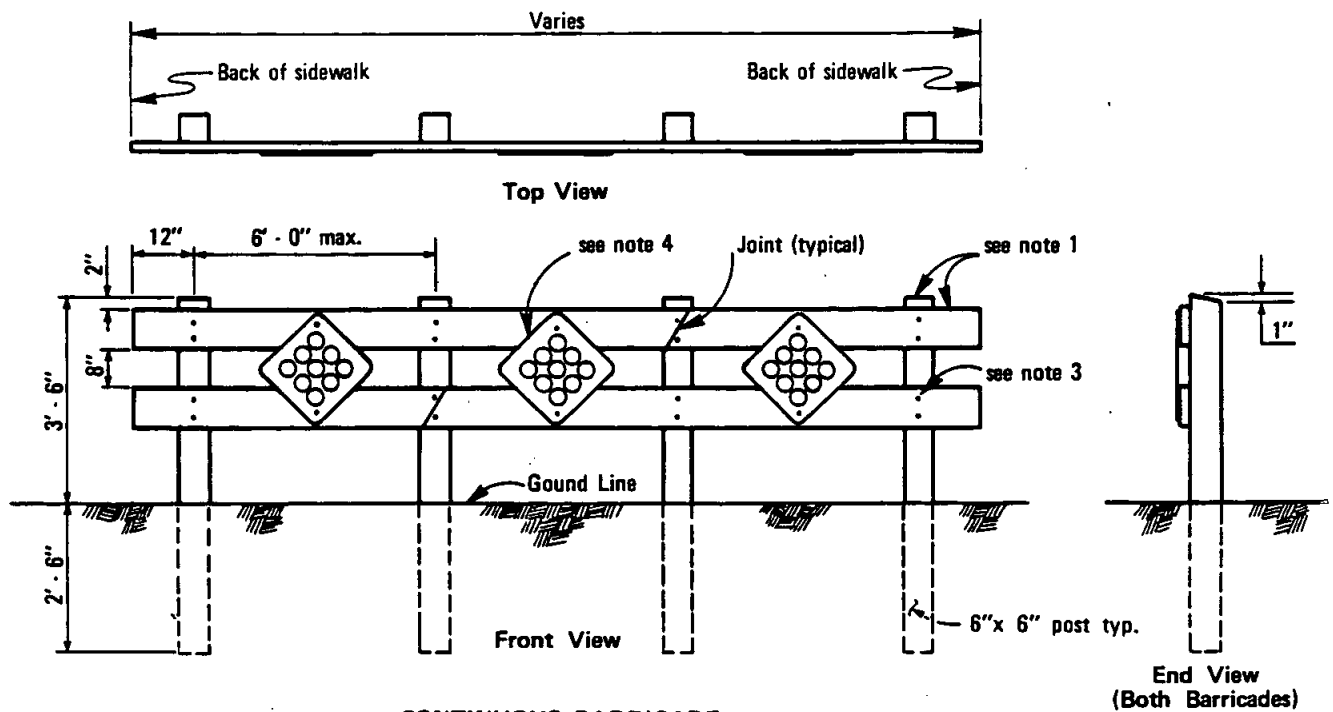
M-6

SAN DIEGO REGIONAL STANDARD DRAWING

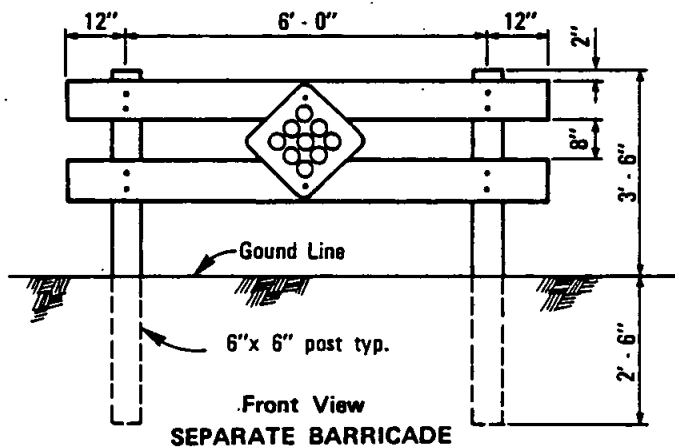
CHAIN LINK FENCE

Revision	By	Approved	Date
Note 3	TRP	M.B.	10-82
Notes	SC	M.B.	5-86
Notes	SC	A.H.	7-88

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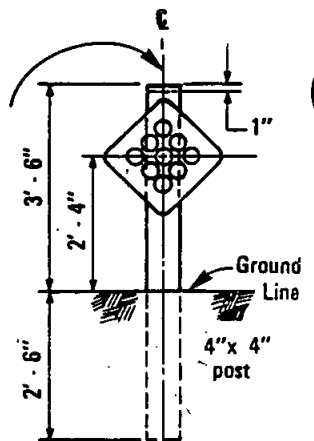


CONTINUOUS BARRICADE



SEPARATE BARRICADE

Location dimension
shown on plans



GUARD POST

NOTES

1. Posts to be structural grade redwood or pressure treated (with wood preservative) Douglas Fir, surfaced four sides; cross pieces to be 2"x 8" select grade Douglas Fir, surfaced four sides.
2. All exposed portions of barricades shall be painted with two coats of white exterior enamel over prime coat.
3. Connections shall be made with 3/8"x 6" galvanized lag screws with one (1) washer each. Reflector sign fasteners to be 3/8"x 1 1/2" galvanized lag screws.
4. Reflector signs - California Type N. Size 18"x 18" - Yellow with nine (9) - 3/4" reflectors (center mount).
 - a. Reflectors shall be red for use on dead end streets, in all other cases they shall be yellow. Reflector material shall be plastic or other approved reflectorized material.
 - b. Sign material shall be aluminum alloy 6061-T6 or 5052-H38, aluminum thickness 0.063 inches.
5. Six foot long hat section metal post per Caltrans Std. Plan A74-A optional for guard post.

LEGEND ON PLANS



Revision	By	Approved	Date
Cont. Barric.	<i>S</i>	<i>D.S.</i>	7-79
Post	<i>TRP</i>	<i>M.B.</i>	10-82

SAN DIEGO REGIONAL STANDARD DRAWING

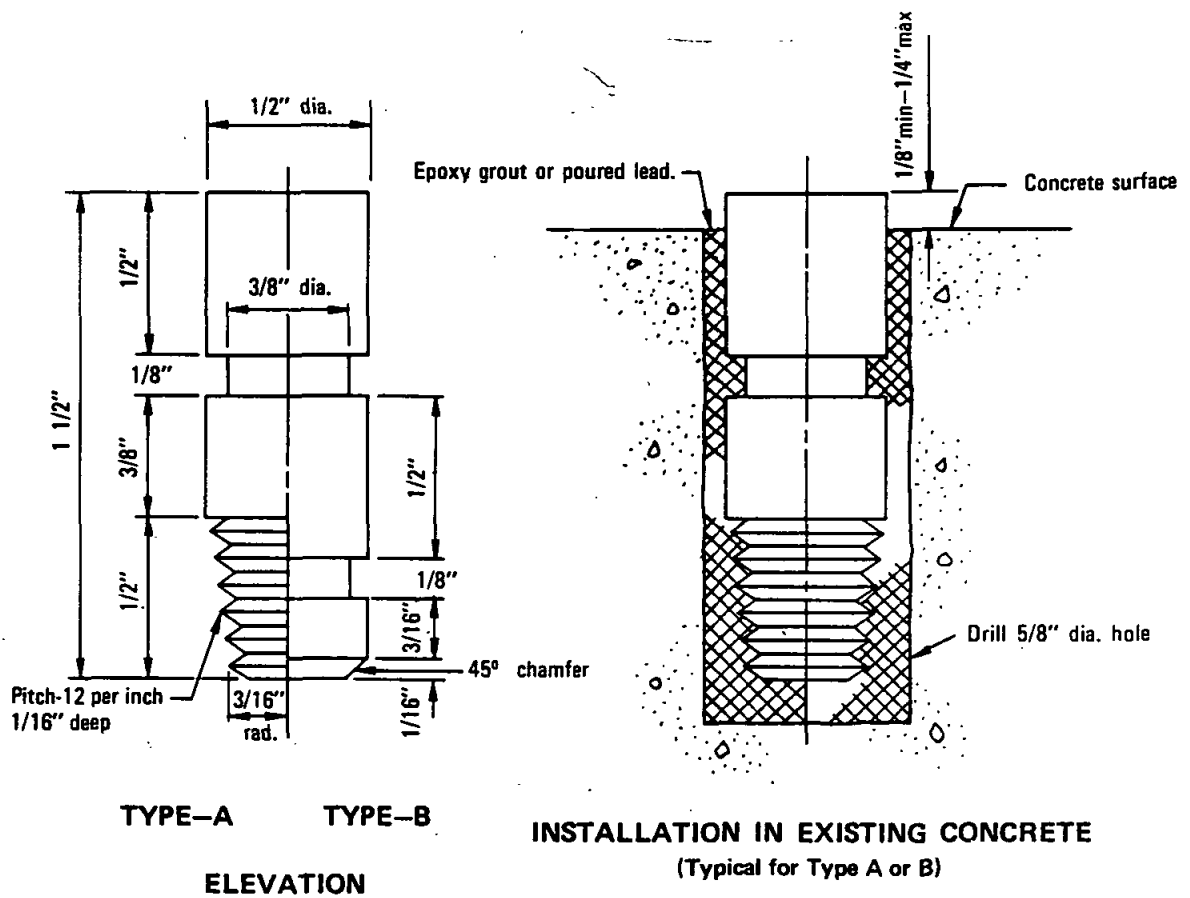
GUARD POST AND BARRICADE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allen Q. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER M-9**



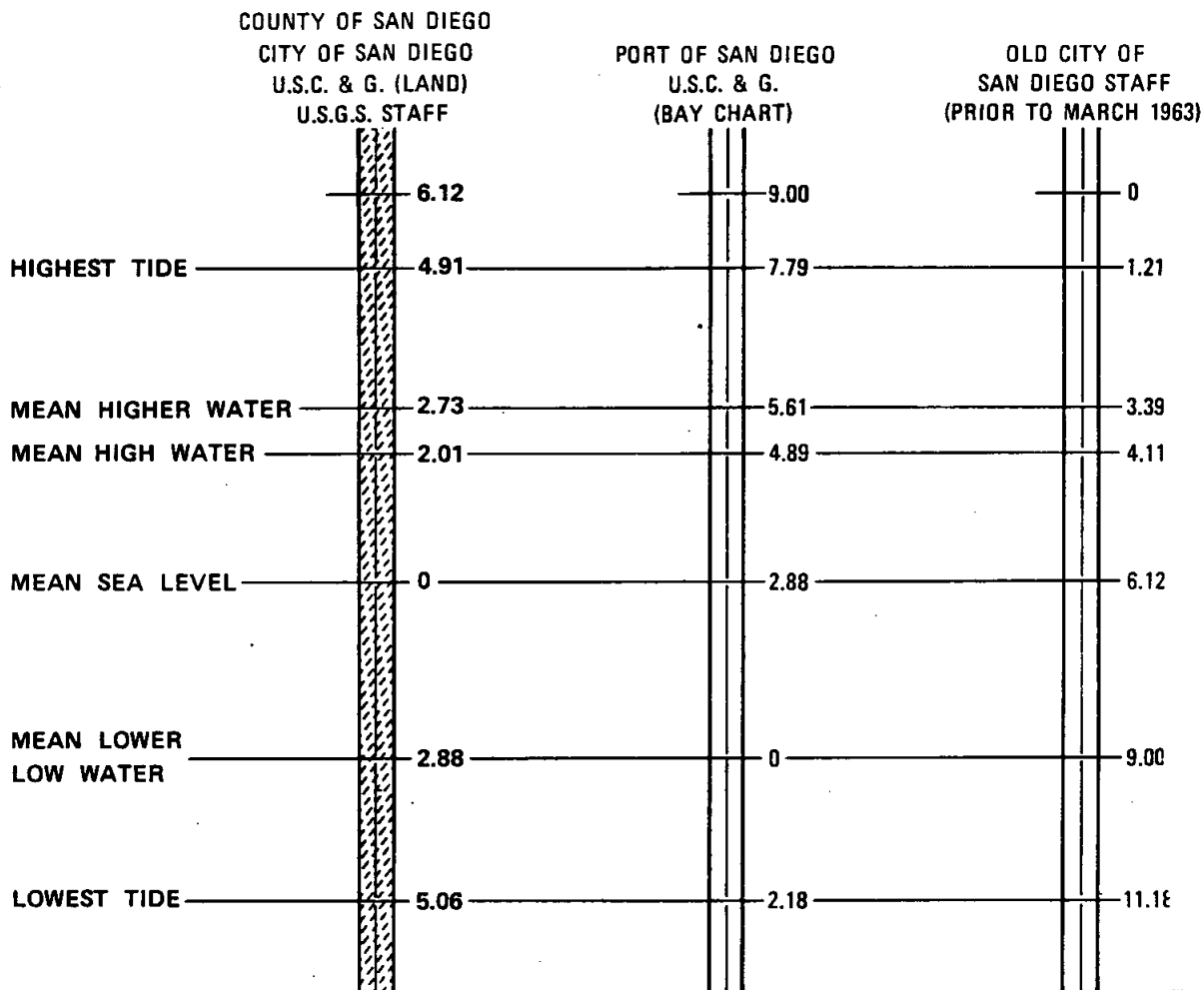
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Alfred J. Kershner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	SAN DIEGO REGIONAL STANDARD DRAWING		Revision	By	Approved	Date
	STREET SURVEY MONUMENT		Notes	IC	D.S.	7-79
			Section	HC	M.B.	5-86
			Taper	JY	S.L.	5-92
DRAWING NUMBER	M-10					



NOTES

1. Material - Brass A.S.T.M. B-16. All machine tolerances $1/64"$ ±, machine finish.
2. May be installed in fresh concrete at time of installation of concrete structure.
3. Location—in most stable, permanent location in vicinity, such as in base for street light standard or traffic signal (behind sidewalk), in curb (not near joint, on curve or near trees), on top of drainage headwall, in foundation for building or retaining wall or in concrete pads for transformers, pump stations etc.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				BENCH MARK - BRASS PLUG		<i>Allen A. Kuehn</i> <i>Dec. 1975</i>
						Coordinator R.C.E. 19807 Date
						DRAWING NUMBER M-11



LEGEND

U.S.C. & G.

U.S.G.S.

MEAN HIGH WATER

MEAN HIGHER WATER

= United States Coast and Geodetic Survey.

= United States Geological Survey.

= Mean of all high water in San Diego Bay.

= Mean of all higher water in San Diego Bay.
Bay charts and topography up to the mean
high tide based on zero at the mean lower
low water.

SOURCE

Data based on U.S.C. & G. "Sea Level Datum of 1929".

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

M-12

SAN DIEGO REGIONAL STANDARD DRAWING

DATUMS

Revision	By	Approved	Date

FOUND MONUMENTS

Found monuments must denote the character of the monument, how it is identified and the record, or no record as applicable.

SET MONUMENTS - Criteria for Locating and Character

On subdivision boundaries, permanent monuments are required; and must be shown on the map at intervals as specified by the local agency. The location of such points that are unacceptable or will be destroyed by construction may be established by ties to permanent reference monuments shown on the final map.

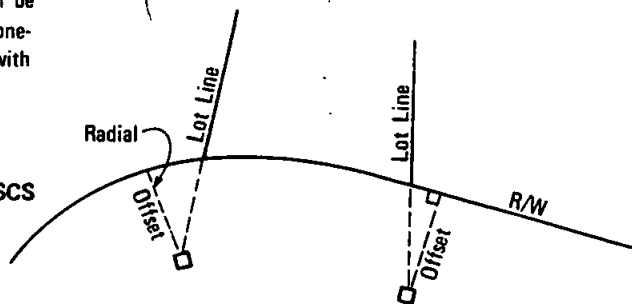
A permanent monument shall be no less substantial than the following:

a. An iron pipe of minimum two inch diameter not less than two feet in length placed upright in the ground so that the top of said pipe is flush with the surface. Said pipe shall be filled with a metal or cement plug at least three inches in depth and centered with a metal tack and disc; or

b. A metal plug with tack and disc set flush with the surface in portland cement concrete sidewalk, curb or pavement; or other monument satisfactory to the City Engineer or County Surveyor. The metal plug shall be anchored 1" deep in sidewalk.

Lot corners and points of curves along street and alley right of way lines where portland cement concrete sidewalks, curbs or pavement exist, or will be constructed as part of the subdivision requirements, shall be identified with tack and disc set flush with the surface along an extension of the lot line at an approved offset, to be measured radially or at right angles to the right of way line in said sidewalk, curb or pavement. In case the sideline of the lot is not radial or at right angles to the right of way line a disc shall be set along an extension of the sideline at an offset to be measured radially or at right angles to the right of way line. Where no such concrete work exists, and none will be required to be constructed, all lot corners, angle points and points of curve shall be marked with a monument no less substantial than a one-half inch steel rod or pipe, 18 inches long, set flush with the surface.

EXAMPLE OF OFFSET DISCS



LEGEND

- Fd 2" Iron Pipe Marked RCE XXXX or per Map XXX unless otherwise noted
- ▲ Fd Street Survey Monument Stamped RCE XXXX or LS XXXX
- ◎ Set 2" x 24" Iron Pipe Marked RCE XXXX or LS XXXX
- Set Lead and Disc Stamped RCE XXXX or LS XXXX
- Set ½" x 18" Iron Pipe Marked RCE XXXX or LS XXXX
- △ Set Street Survey Monument Stamped RCE XXXX or LS XXXX per Standard Drawing M-10

The addition of other symbols is permissible where such will result in a clearer map.

The following notes should be used in the legend where applicable.

Unless otherwise shown on this map:

1. All lot corners except as described below will be monumented by a ½ inch by 18 inch iron pin stamped (RCE or LS number).
2. Lot corners along the sideline of dedicated street right of way will be monumented by a disc stamped (RCE or LS number), set along an extension of the lot line at an offset of ___ in the (curb, sidewalk). The offset shall be measured radially, or at right angles, to the right of way line. (See example below.)
3. All points of curve of the sidelines of dedicated streets will be monumented by a disc stamped (RCE or LS number), set at an offset of ___ in the (curb, sidewalk). The offset shall be measured radially.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING SURVEY MONUMENTS	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Allan A. Keshner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date
Notes	RC	Q.S.	7.79		
Notes	JY	G.H.	5.92		
DRAWING NUMBER				M-13	

1 Gram = 15.4324 grains
 1 Gram = 0.0353 oz.
 1 Kg. = 2.2046 lb.
 1 Kg. = 0.0011 ton
 1 Ton (met) = 1.1023 ton

WEIGHT

1 Grain = 0.0648 g.
 1 Ounce = 28.3495 g.
 1 Pound = 0.4536 kg.
 1 Ton = 907.1848 kg.
 1 Ton = 0.9072 ton (met)

1 Sq. cm. = 0.1550 sq. in.
 1 Sq. m. = 10.7639 sq. ft.
 1 Sq. m. = 1.1960 sq. yd.
 1 Hectare = 2.4710 acres
 1 Sq. km. = 0.3861 sq. mile
 1 Sq. km. = 247.10 acres

AREA

1 Sq. in. = 6.4516 sq. cm.
 1 Sq. ft. = 0.0929 sq. m.
 1 Sq. yd. = 0.8361 sq. m.
 1 Acre = 0.4047 hectare
 1 Sq. mile = 2.5900 sq. km.
 1 Acre = 0.0040 sq. km.

1 Cu. cm. = 0.0610 cu. in.
 1 Cu. m. = 35.3134 cu. ft.
 1 Cu. m. = 1.3079 cu. yd.

VOLUME

1 Cu. in. = 16.3872 cu. cm.
 1 Cu. ft. = 0.0283 cu. m.
 1 Cu. yd. = 0.7646 cu. m.

1 Liter = 61.0250 cu. in.
 1 Liter = 0.0353 cu. ft.
 1 Liter = 0.2642 gal. (U.S.)
 1 Liter = 0.0284 bu. (U.S.)

CAPACITY

1 Cu. in. = 0.0164 liter
 1 Cu. ft. = 28.3162 liters
 1 Gal. = 3.7853 liters
 1 Bu. = 35.2383 liters

1 MM. = 0.0394 in.
 1 CM. = 0.3937 in.
 1 Meter = 3.2808 ft.
 1 Meter = 1.0936 yd.
 1 Km. = 0.6214 mile

LENGTH

1 In. = 25.4000 mm.
 1 In. = 2.5400 cm.
 1 Ft. = 0.3048 m.
 1 Yd. = 0.9144 m.
 1 Mile = 1.6093 km.

MULTIPLE PREFIX
 1000000 mega
 1000 kilo
 100 hecto
 10 deka

METRIC PREFIX

MULTIPLE PREFIX
 1/10 deci
 1/100 centi
 1/1000 milli
 1/1000000 micro

TEMPERATURE

Degrees Farenheit = 9/5 (Degrees Celcius) + 32

Degrees Centigrade = 5/9 (Degrees Farenheit - 32)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

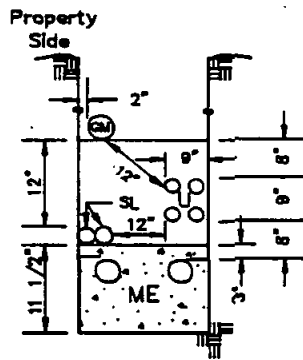
M-14

SAN DIEGO REGIONAL STANDARD DRAWING

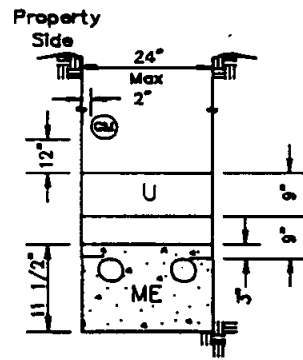
METRIC EQUIVALENTS

Revision	By	Approved	Date
Equation	3C	D. J.	7-79

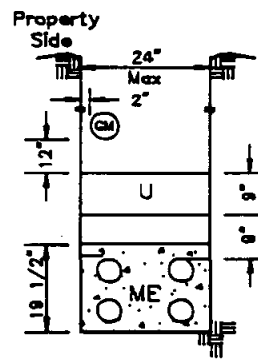
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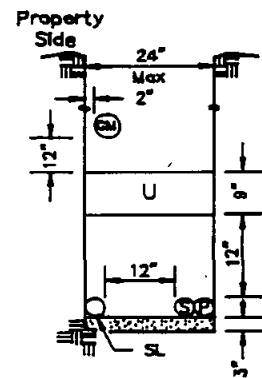
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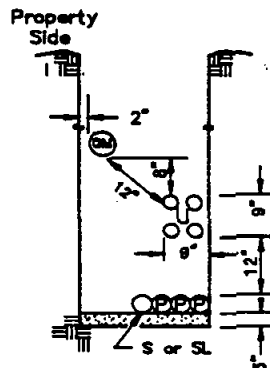
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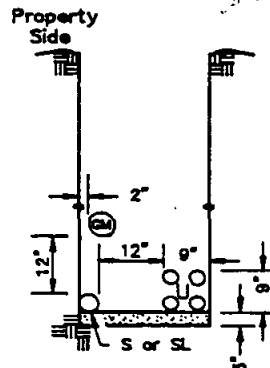
TYPE C



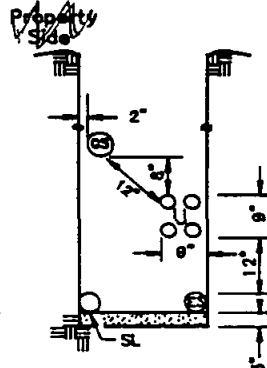
TYPE D



TYPE E



TYPE F



TYPE G

SERVICE TRENCH
ON
PUBLIC PROPERTY

LEGEND		MIN. COVER
GM	Gas Main	30"
GS	Gas Service	30"
P	Primary Electric	42"
S	Secondary Electric	30"
ES	Electric Service	30"
ME	Multiple Electric (P, S or ES in Spacers) Concrete Encased	24"
SL	Street Light (not series)	30"
U	CATV	24"
	TELCO	24"

NOTES:

- All dimensions are typical unless otherwise noted.
- Generally utilities are to be installed under the applicable specifications for the particular utility and the specifications of the owner Agency.
- The location of utilities as shown by the Standard Drawing shall in no way violate existing codes or regulations applicable to individual utilities.
- Installation of sewer and/or water utilities are not permitted in the joint trench shown above.
- Minimum depth of gas pipe may, subject to gas company inspectors approval, be reduced to 24" where necessary to clear structure crossings.
- Depth and width of trench varies.
- CATV main or trunk line conduit required along all streets, except cul-de-sac streets less than 1000' in length which may be served by feeder lines only.
- CATV 1 1/2" feeder conduit shall run across streets with each power service line and capped at edge of sidewalk.
- All CATV terminals and conduits shall be terminated at generally accepted locations and marked. A map shall be filed with the appropriate agency showing the locations of the CATV system.
- In no case shall CATV conduits be placed within 12" of gas lines. Also conduits are not to be placed directly over gas lines.
- CATV conduit may be placed with the TELCO conduit provided the TELCO minimum depth is held.

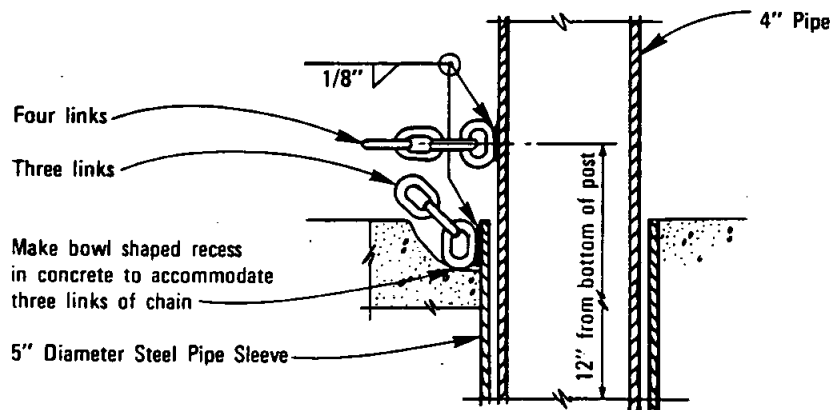
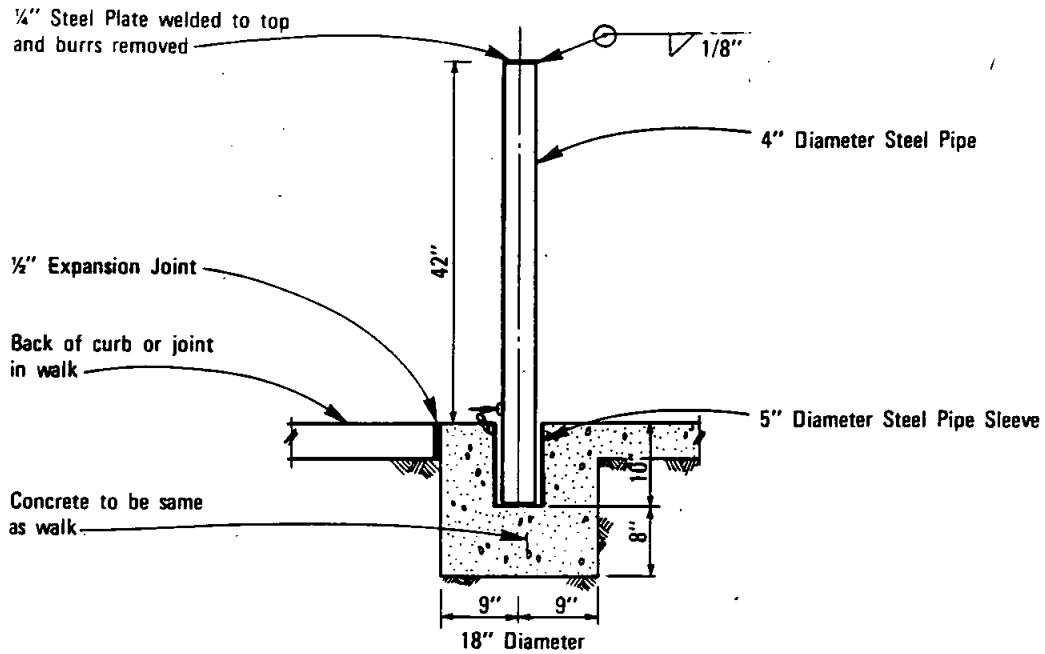
Revision	By	Approved	Date
New Dwg.	30	A.H.	10/88

SAN DIEGO REGIONAL STANDARD DRAWING

JOINT TRENCH UTILITIES LOCATION

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
George Rubin SEPT. 1988
Chairman Date

DRAWING
NUMBER M-15



HASP DETAIL
(Showing Welds)

NOTES

1. Chain to be 1/4" proof coil chain galvanized steel. Weld four links to post and three links to pipe sleeve.
2. All metal to be hot-dip galvanized after fabrication.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

David L. Johnson July 1979
Coordinator R.C.E. 25291 Date

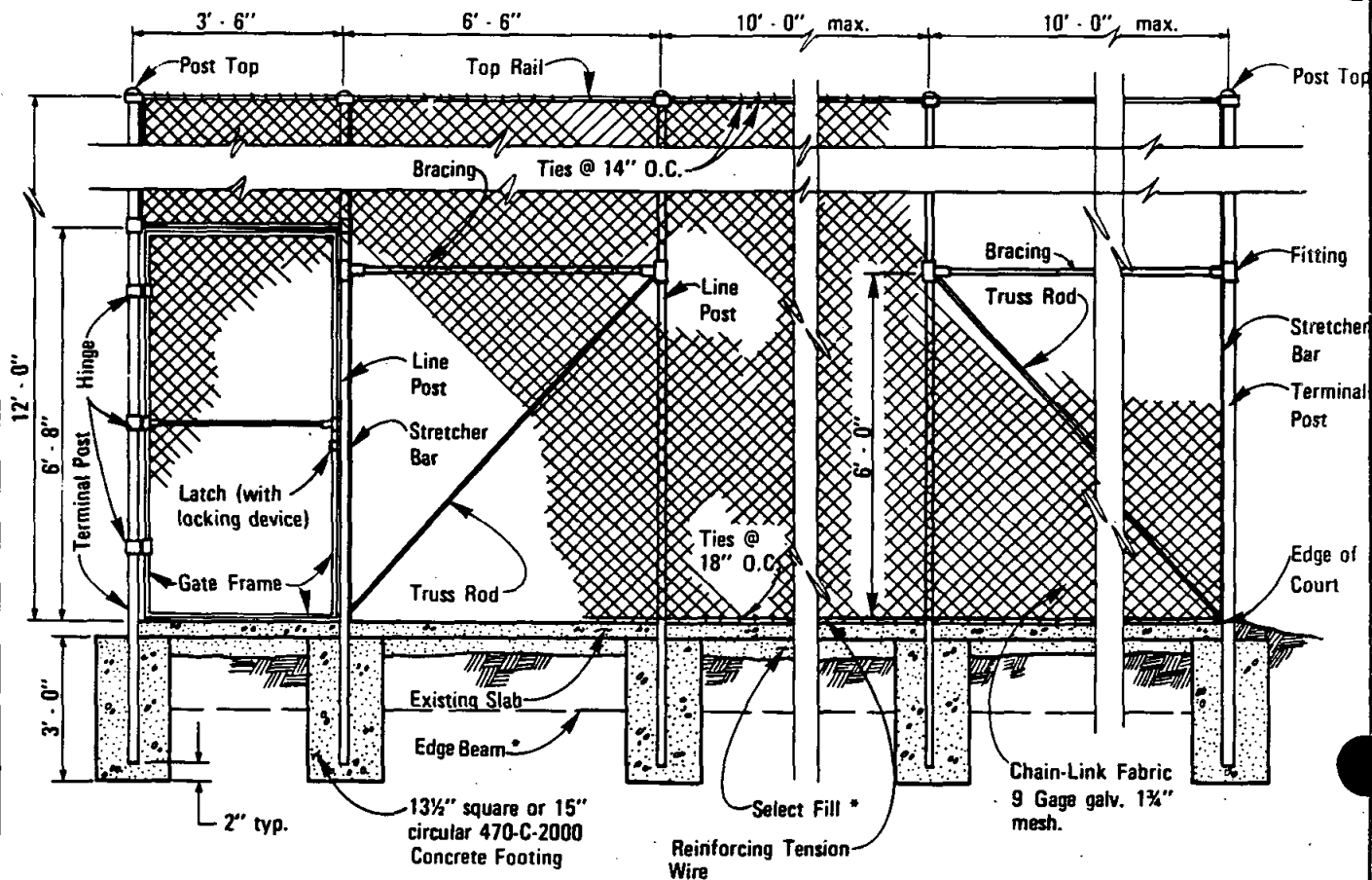
SAN DIEGO REGIONAL STANDARD DRAWING

DEMOUNTABLE POST

**DRAWING
NUMBER**

M-16

Revision	By	Approved	Date



*For Edge Beam, Slab, and Select Fill details, see plans.

ELEVATION

NOTE:

Chain link fabric shall be erected on the interior side of the courts.

CAUTION:

This Standard Drawing is not to be used if any wind screen is to be applied to the fence.

DESCRIPTION	MIN. SIZE IN INCHES	MIN. WEIGHT PER LIN FT IN LBS
Line Post	2.375 O.D.	3.65
Terminal Post	2.875 O.D.	5.79
Top Rail	1.660 O.D.	2.27
Bracing	1.660 O.D.	2.27
Gate Frame	1.660 O.D.	2.27

Revision	Approved	Date
Fabric	M.B.	5-86
Caution	G.H.	7-88

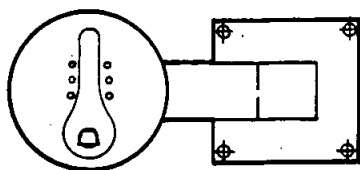
SAN DIEGO REGIONAL STANDARD DRAWING

TENNIS COURT FENCE CHAIN-LINK

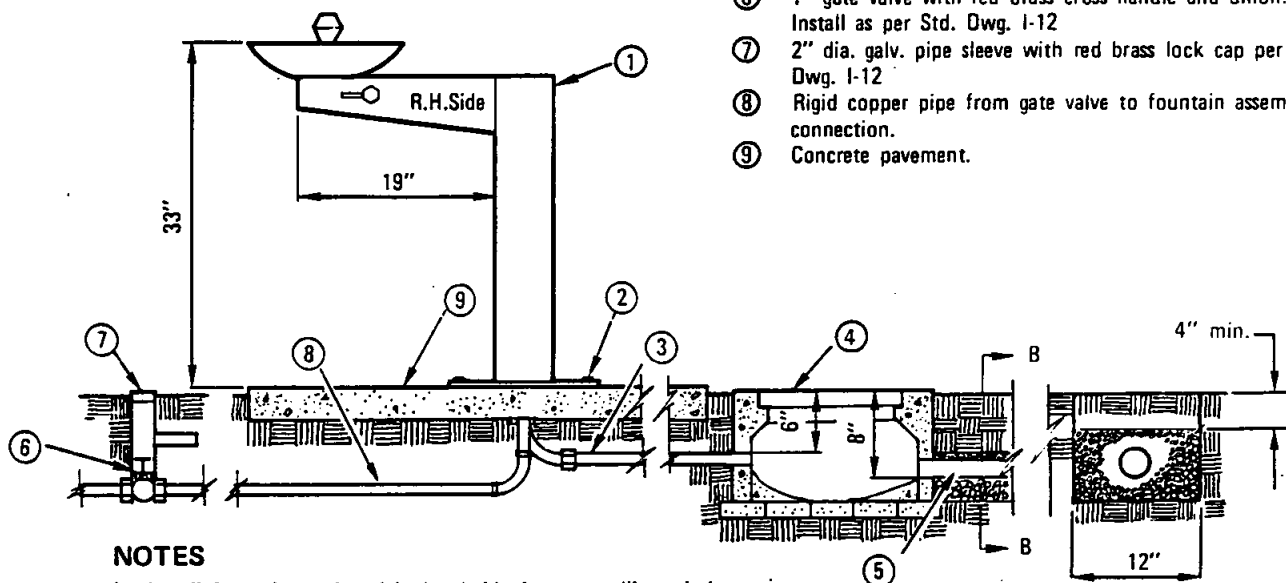
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

David J. Solomon July 1999
Coordinator R.C.E. 25291 Date

DRAWING
NUMBER M-17



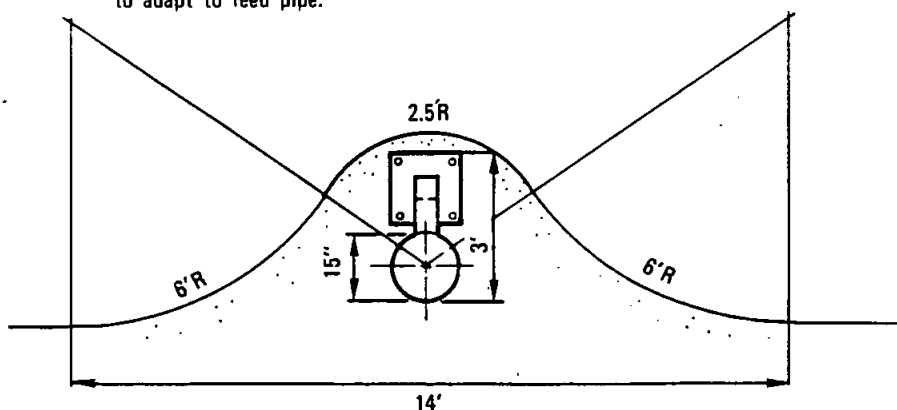
- ① Drinking Fountain - Haws model 3376 or approved equal.
- ② 3/8" dia. expansion anchors with flat (recessed heads) screws 4 places.
- ③ 1 1/4" P.V.C. pipe with sweep 90° ell connection to fountain drain.
- ④ 9 1/2" x 16" concrete yard box with hinged locking top (Brooks No. 3HL or equal) set on red brick foundation.
- ⑤ 4" x 40 lin. ft. perforated underdrain pipe, encased in crushed rock (3/4" size). Pipe to be A.D.S. or equal.
- ⑥ 1" gate valve with red brass cross handle and union. Install as per Std. Dwg. I-12
- ⑦ 2" dia. galv. pipe sleeve with red brass lock cap per Std. Dwg. I-12
- ⑧ Rigid copper pipe from gate valve to fountain assembly connection.
- ⑨ Concrete pavement.



SECT B-B

NOTES

1. Install fountain so that right hand side faces prevailing wind.
2. Hand form a concrete bowl at bottom of yard box to facilitate sand clean out.
3. Perforated drain pipe and trench are to drain away from fountain at 1% min. slope. Keep drain in lawn areas.
4. Item no. 6 is a one inch gate valve. Use red brass bushing reducers to adapt to feed pipe.



TYPICAL PLAN

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Harry R. Holt Oct 1982
Chairman R.C.E. C13768 Date

SAN DIEGO REGIONAL STANDARD DRAWING

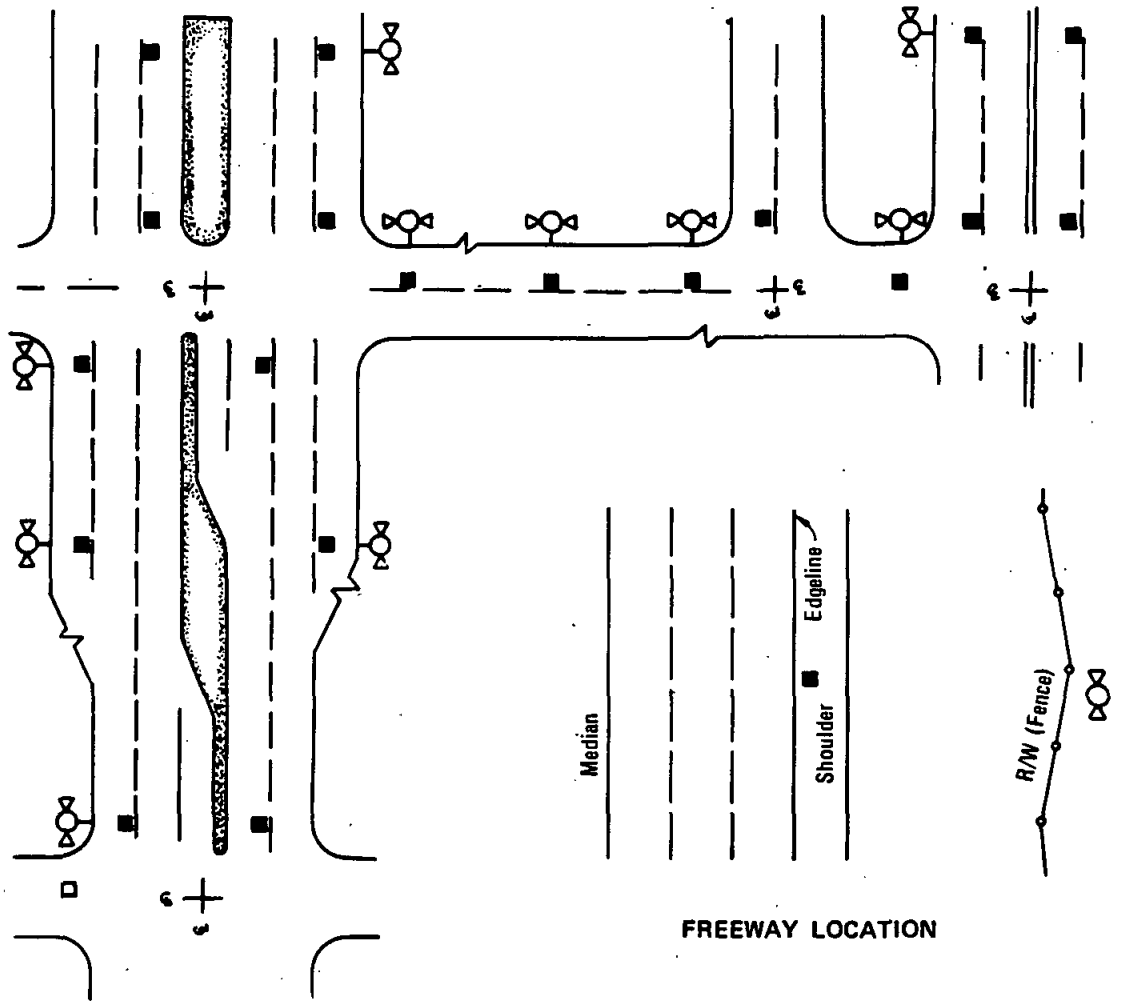
DRINKING FOUNTAIN

DRAWING
NUMBER

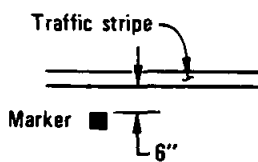
M-18

Revision	By	Approved	Date

STREET LOCATIONS



FREEWAY LOCATION



DETAIL

MARKERS - Shall be blue 2-way stimsonite lifelite 88AB or equal.

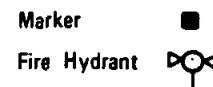
ADHESIVE - An ample amount of two part (A&B) epoxy or equal.

SURFACES - Clean and dry prior to installation per manufacturer's recommendations. Install markers with reflective surfaces facing oncoming vehicles and offset 2" from lane lines toward fire hydrant.

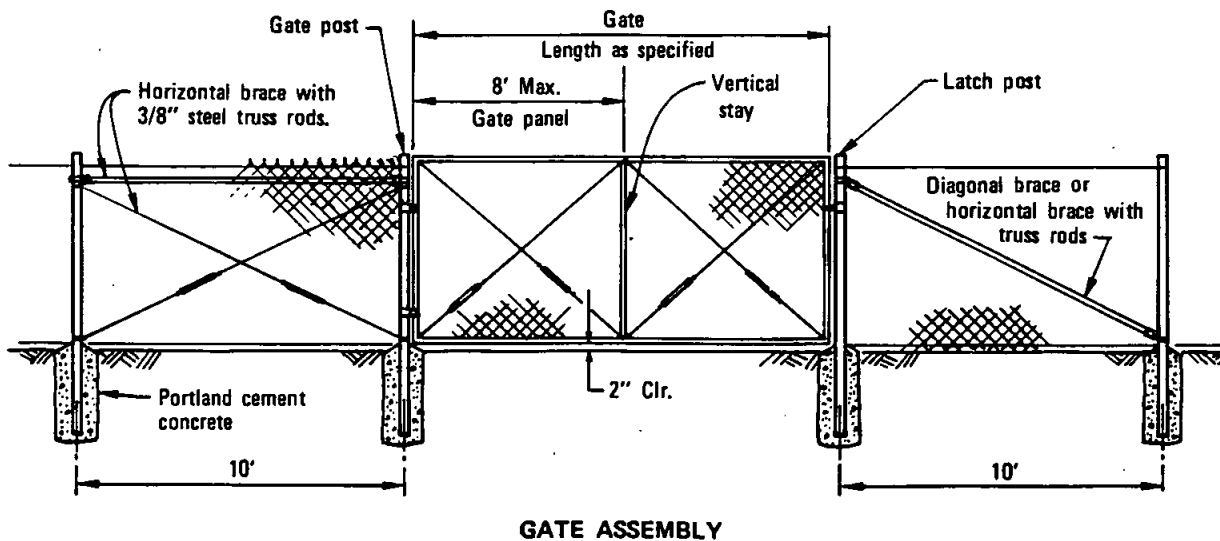
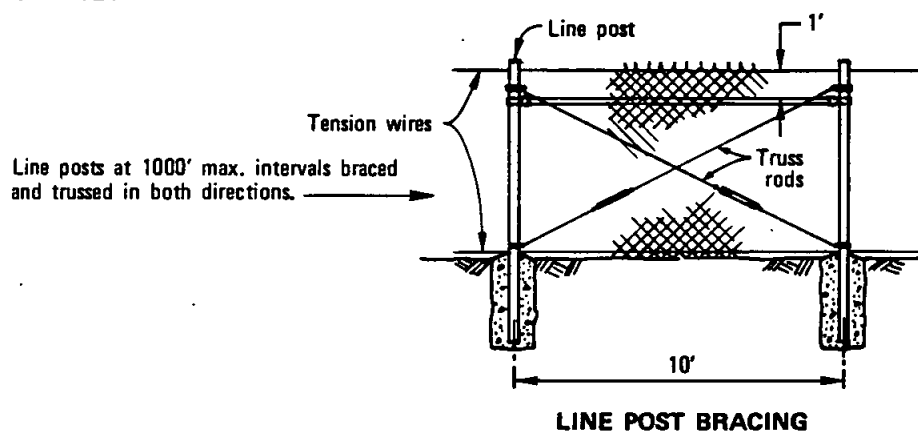
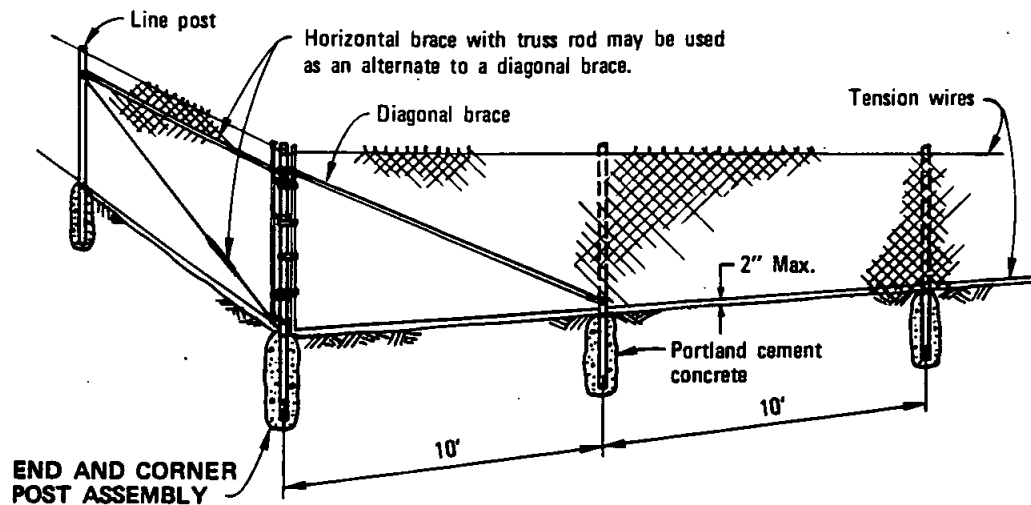
NOTES:

1. Fire Department will provide location(s) for all markers in PRD's, Commercial Lots and other areas outside of Public Right of Way.
2. Markers must be installed at all new and relocated hydrants and within all resurfacing projects.
3. For streets without lane lines or streets with raised pavement markers and no painted lane lines, install markers 6" from centerline or existing markers.

LEGEND ON PLANS



Revision	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Harry R. Holt</i> Oct 1982 Chairman A.C.E. C13768 Date
Frwy loc.	<i>M.B.</i>	<i>5-86</i>			
			FIRE HYDRANT MARKERS		DRAWING NUMBER M-19



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

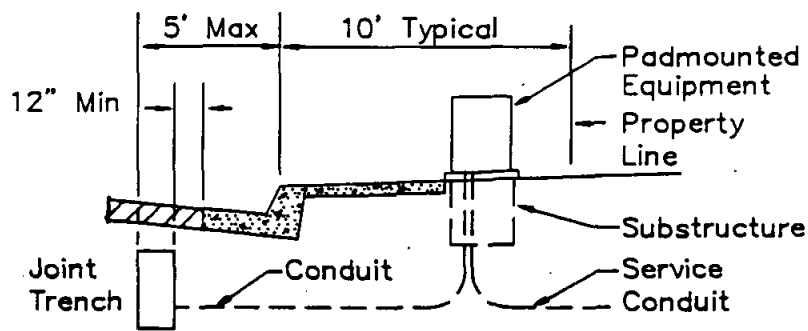
M. B. B. 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **M-20**

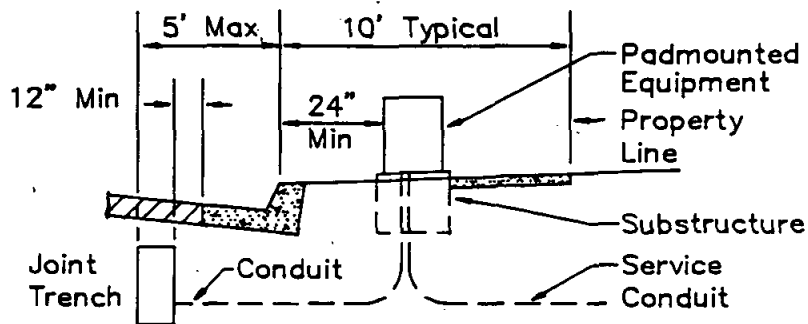
SAN DIEGO REGIONAL STANDARD DRAWING

**CHAIN LINK FENCE
DETAILS**

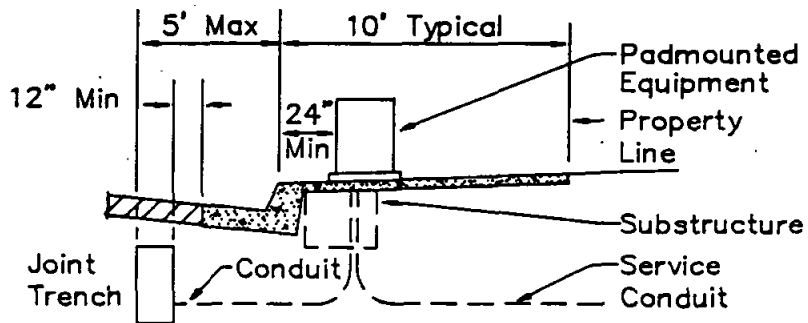
Revision	By	Approved	Date



SIDEWALK NEXT TO CURB



SIDEWALK NEXT TO PROPERTY LINE

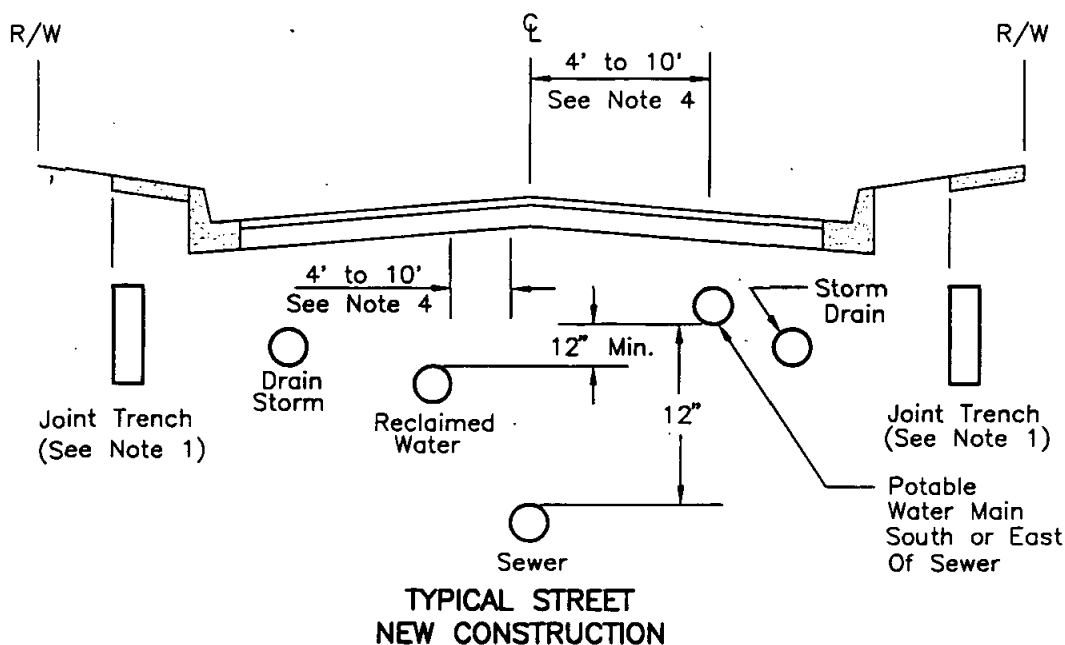
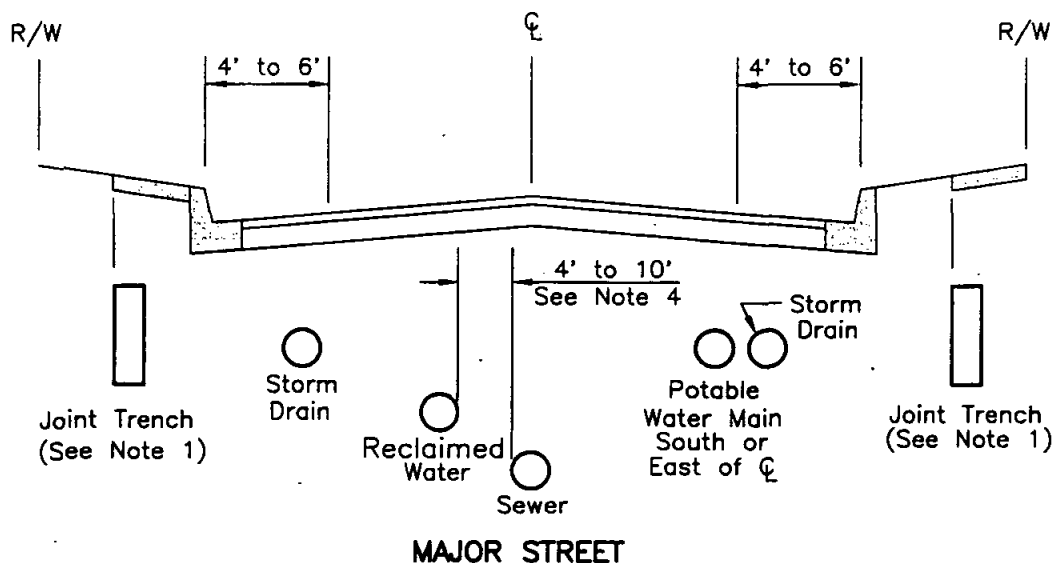


SIDEWALK NEXT TO CURB AND PROPERTY LINE

NOTES:


1. Sidewalk shall have a minimum of four (4) foot clear area (path, not including curb) passing pedestals, pullboxes and other structures.
2. See Standard Drawing M-15 for joint trench.

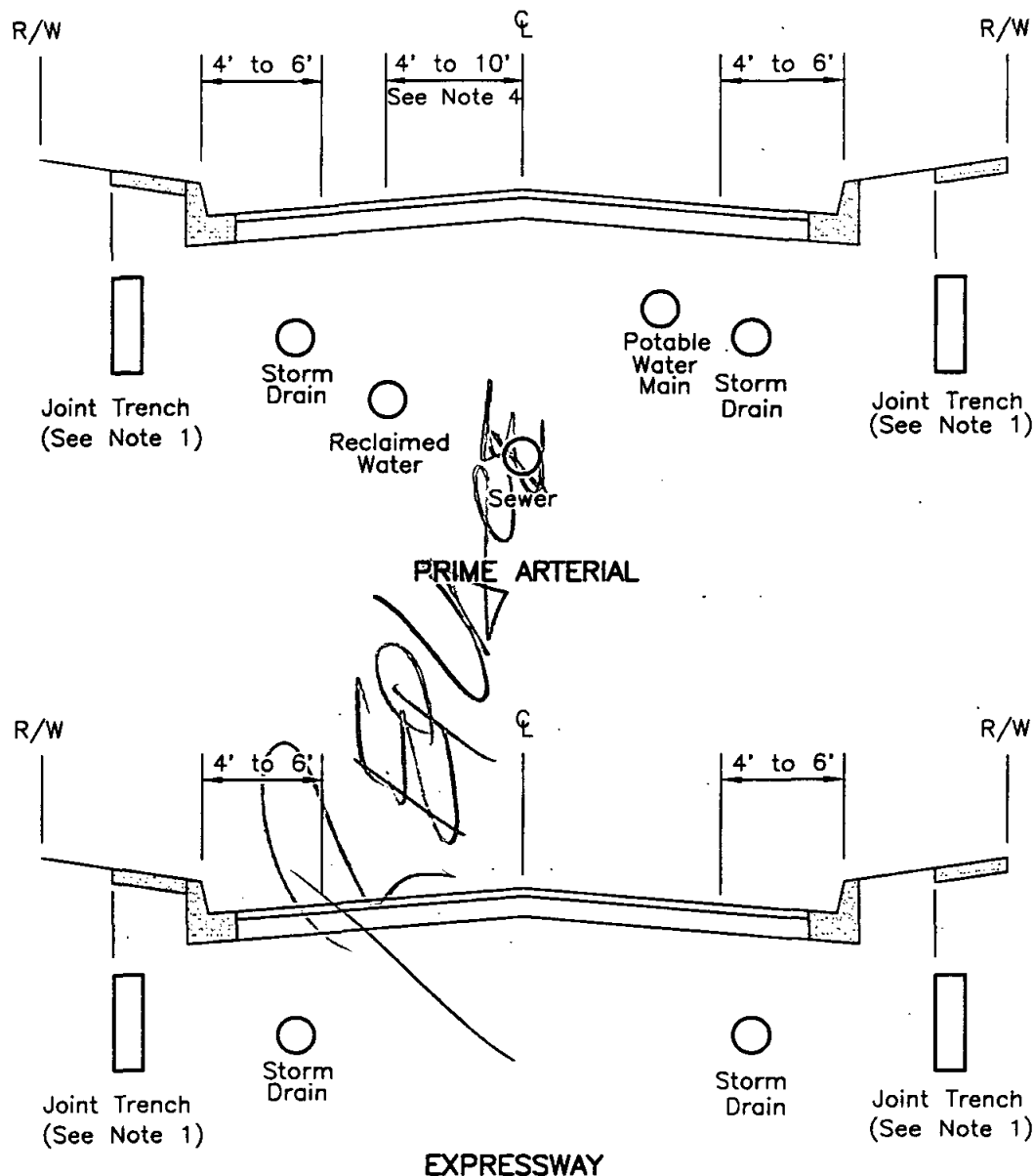
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				UNDERGROUND TYPICAL LOCATION CONVERSION/REPLACEMENT/UPGRADE		<i>George Pabian</i> SEPT. 1988
						Chairman Date
						DRAWING NUMBER
						M-21



NOTES

1. At catch basin locations, joint trench shall be 4 ft. minimum from back of curb to inside wall of trench. See Standard Drawing M-15 for configuration of utilities in joint trench.
2. Sewer and reclaimed water mains shall be designed to cross under potable water mains. The vertical separation between potable water and reclaimed water shall be a minimum of 12 inches.
3. Sewer and reclaimed water laterals shall cross under potable water main, with a minimum vertical separation of 12 inches.
4. Sewer and reclaimed water mains shall maintain a 10 ft. minimum horizontal separation, O.D. to O.D., with any potable water or sewer/reclaimed main. This separation may be reduced utilizing special construction, with special approval from the Agency and the County Health Dept. For sewer or reclaimed water mains less than 24 inches in diameter, only Agency approval is required.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  Chairman R.C.E. 25902 Date	SAN DIEGO REGIONAL STANDARD DRAWING	Revision	By	Approved	Date
		New Dwg	01	RLM	2/95
DRAWING NUMBER M-22	UTILITY LOCATIONS LOCAL AND MAJOR STREETS				



NOTES

1. At catch basin locations, joint trench shall be 4 ft. minimum from back of curb to inside wall of trench. See Standard Drawing M-15 for configuration of utilities in joint trench.
2. Sewer and reclaimed water mains shall be designed to cross under potable water mains. The vertical separation between potable water and reclaimed water shall be a minimum of 12 inches.
3. Sewer and reclaimed water laterals shall cross under potable water main, min. vertical separation of 12 inches.
4. Sewer and reclaimed water mains shall maintain a 10 ft. minimum horizontal separation, O.D to O.D., with any potable water or sewer/reclaimed main. This separation may be reduced utilizing special construction, with special approval from the Agency and the County Health Dept. For sewer or reclaimed water mains less than 24 inches in diameter, only Agency approval is required.

Revision	By	Approved	Date
New Dwg	ON	RLM	2/95

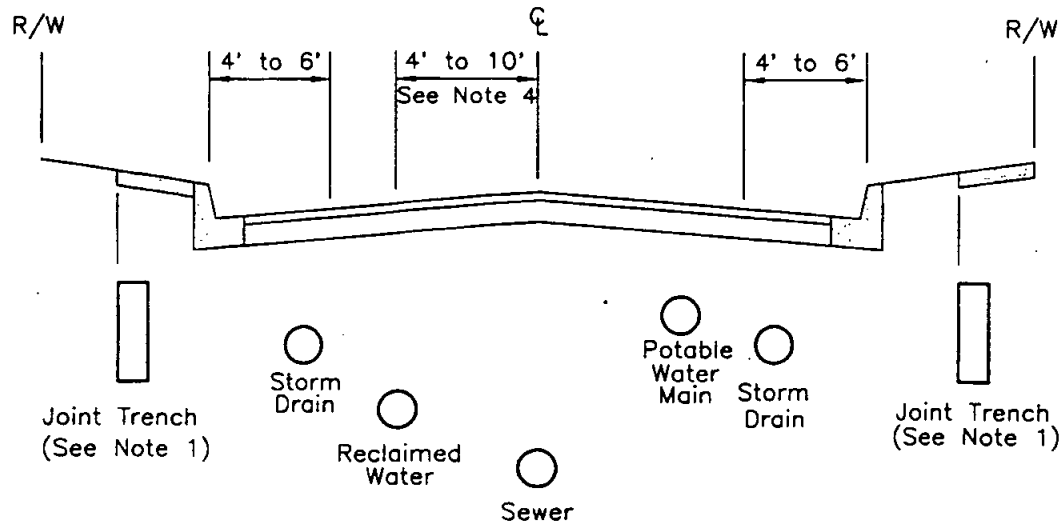
SAN DIEGO REGIONAL STANDARD DRAWING

UTILITY LOCATIONS PRIME ARTERIALS AND EXPRESSWAYS

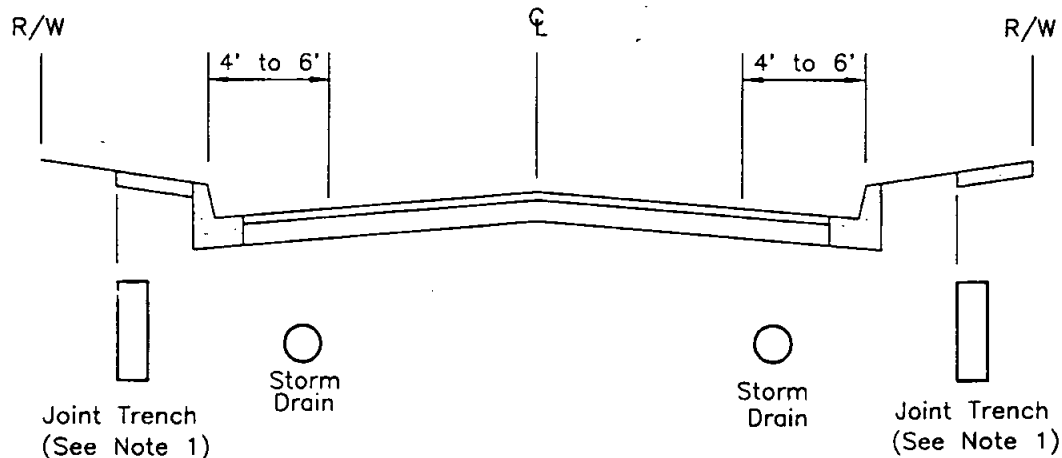
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

[Signature] 2-95
Chairman R.C.E. 25902 Date

DRAWING
NUMBER M-23




PRIME ARTERIAL

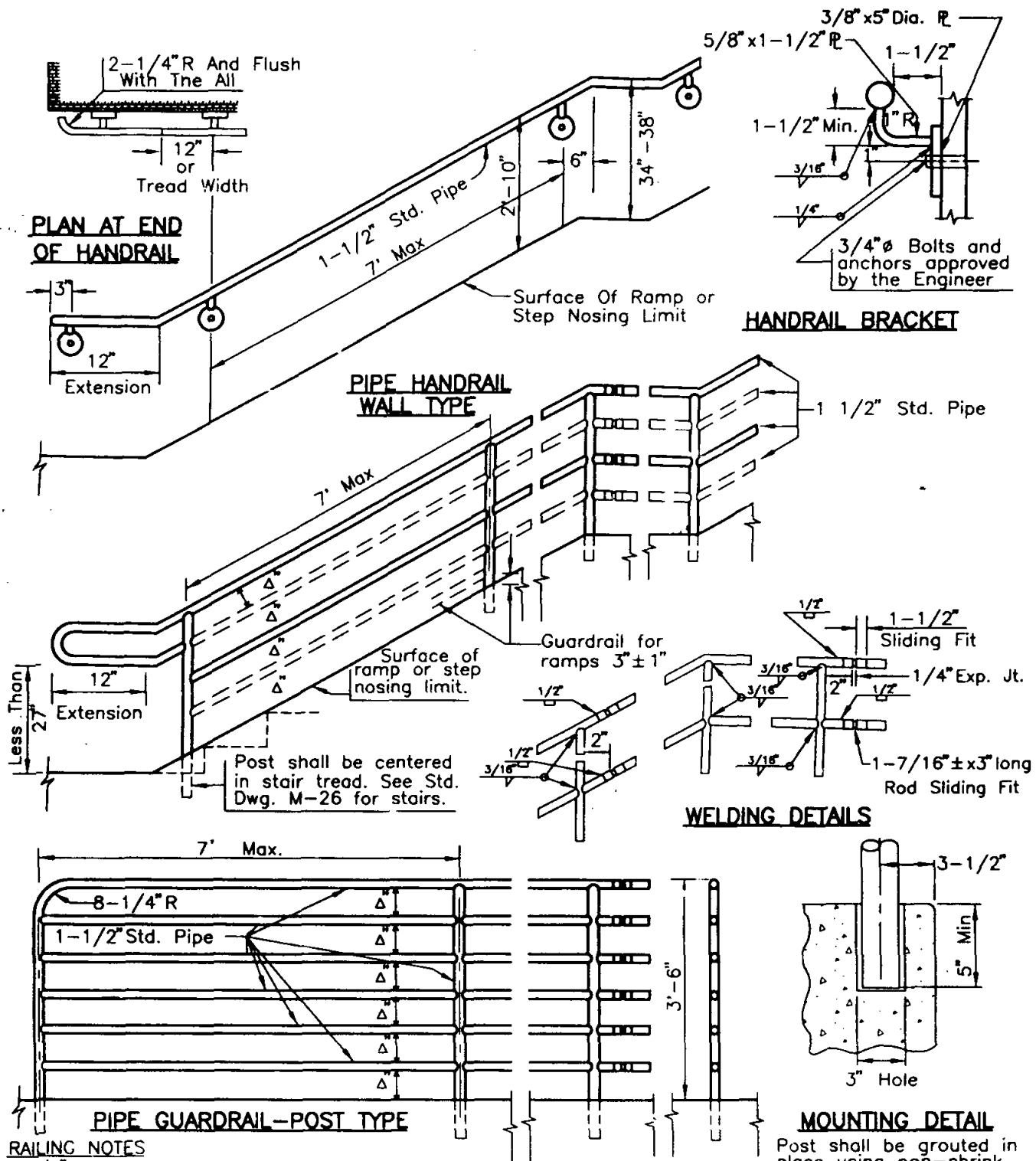


EXPRESSWAY

NOTES

1. At catch basin locations, joint trench shall be 4 ft. minimum from back of curb to inside wall of trench. See Standard Drawing M-15 for configuration of utilities in joint trench.
2. Sewer and reclaimed water mains shall be designed to cross under potable water mains. The vertical separation between potable water and reclaimed water shall be a minimum of 12 inches.
3. Sewer and reclaimed water laterals shall cross under potable water main, min. vertical separation of 12 inches.
4. Sewer and reclaimed water mains shall maintain a 10 ft. minimum horizontal separation, O.D. to O.D., with any potable water or sewer/reclaimed main. This separation may be reduced utilizing special construction, with special approval from the Agency and the County Health Dept. For sewer or reclaimed water mains less than 24 inches in diameter, only Agency approval is required.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
New Dwg	ON	RLM	2/95		
				UTILITY LOCATIONS PRIME ARTERIALS AND EXPRESSWAYS	 Chairman R.C.E. 25902 Date
				DRAWING NUMBER	M-23



RAILING NOTES

1. 1/4" Expansion joints @ 16' ± centers.
2. Weld and grind smooth all connections.
3. All railing to be hot dip galvanized after fabrication.
4. Pipe shall seamless steel ASTM A53 Grade B.
5. Maximum Δ = 4". Guardrails and handrails for stairs and ramps more than 30" above grade shall have intermediate rails equally spaced such that a sphere 4" in diameter cannot pass through.
6. Handrail extension for stairs, at all bottom risers, shall be 12" plus one tread width.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

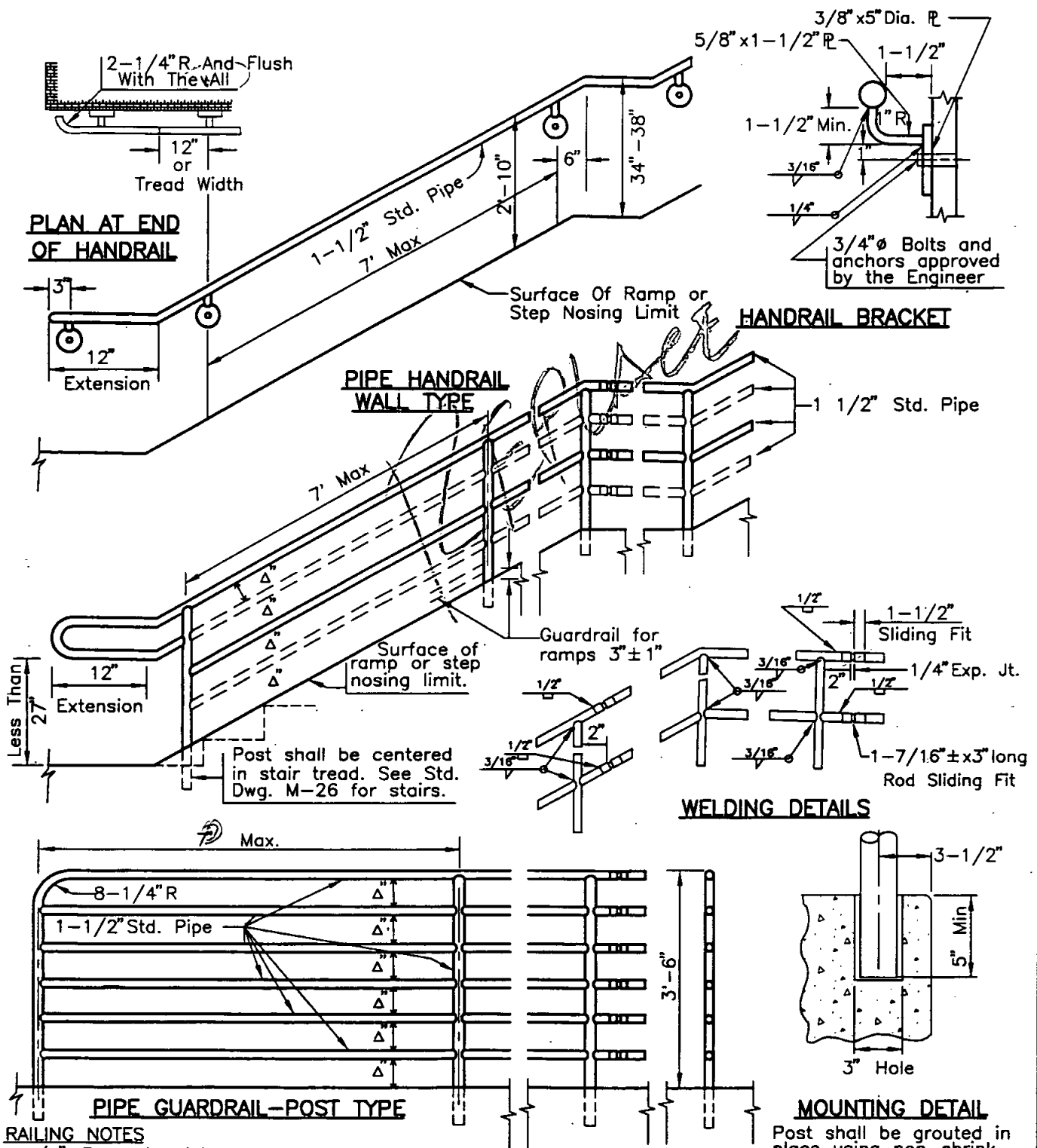
SAN DIEGO REGIONAL STANDARD DRAWING

Chairman R.C.E. 25902 Date

PEDESTRIAN PROTECTIVE RAILING

DRAWING
NUMBER M-24

Revision	By	Approved	Date
ADA Rqmt	CA	RLM	3/95



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARD COMMITTEE

Chairman R.C.E. 25902 Date

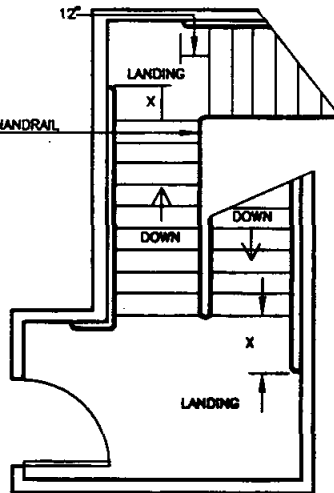
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M-24

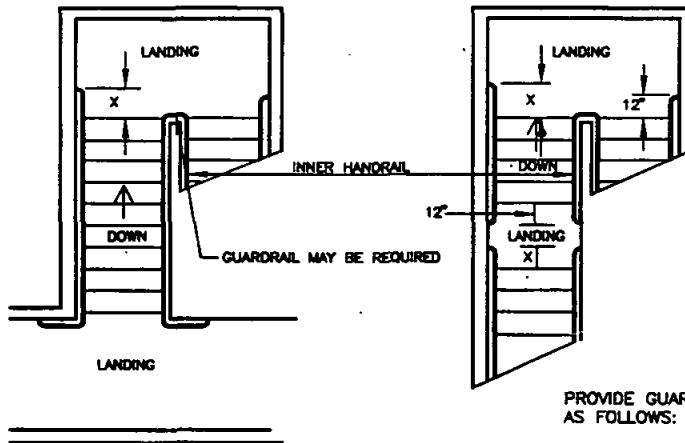
SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTRIAN PROTECTIVE RAILING

Revision	By	Approved	Date
ADA Rqmt	01	RLM	2/95



NOTE: INNER HANDRAIL AT LANDINGS OF STAIRS THAT DOUBLE BACK OR IMMEDIATELY TURN SHALL BE CONTINUOUS, AND SHALL NOT EXTEND ONTO LANDING OR PATH OF TRAVEL.



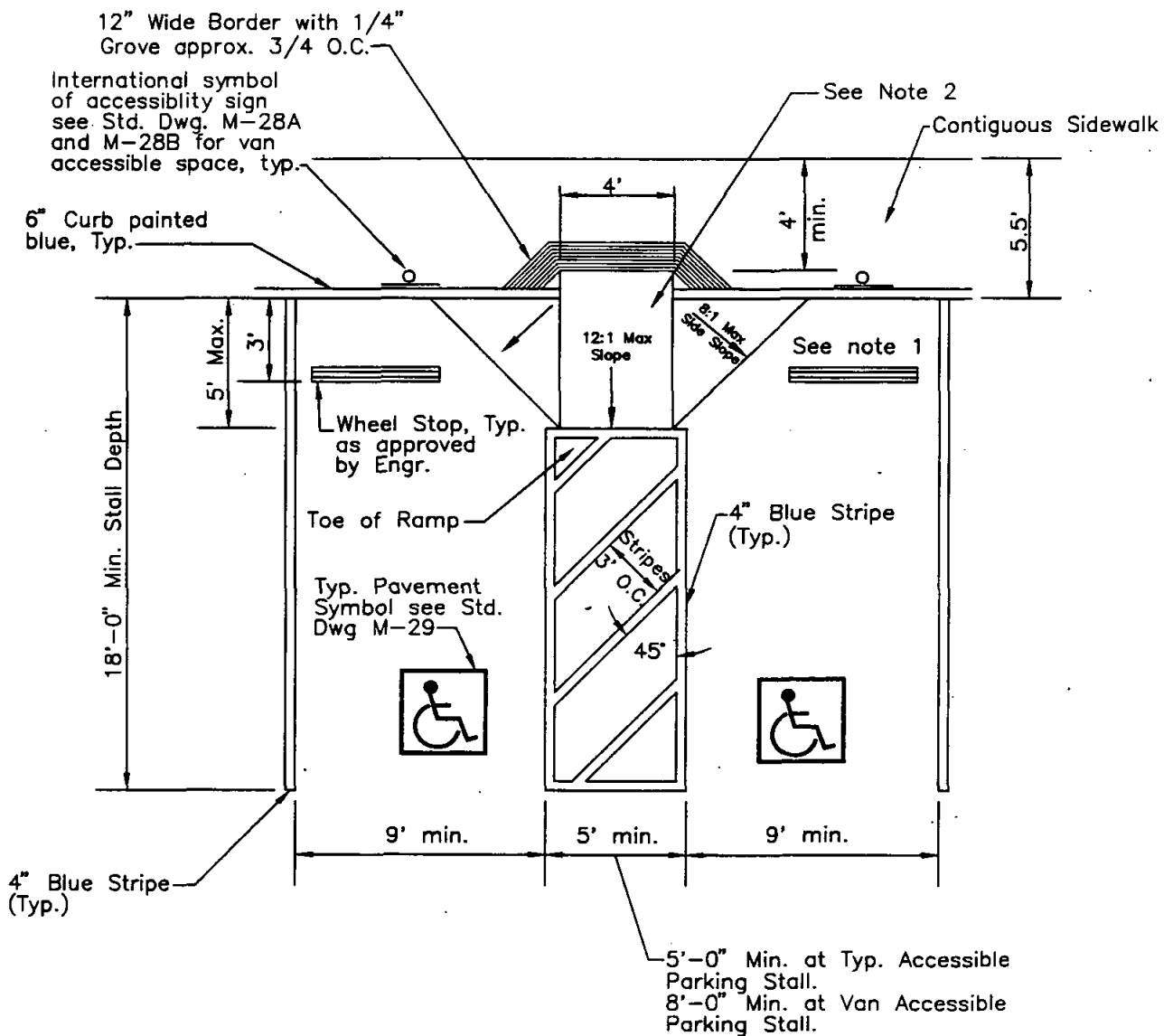
PROVIDE GUARDRAIL EXTENSIONS
AS FOLLOWS:

1. TYPE A ON OPEN SIDE OF ALL LANDINGS MORE THAN 30 INCHES ABOVE GRADE OR FLOOR BELOW.
2. TYPE B ON OPEN SIDE OF STAIRS (INCLUDING LANDINGS) WHEN SPECIFIED.



1. Post type guardrails, and handrails for stairs or landings 30 inches or less above grade or floor below shall have only one intermediate rail centered between the step nosing limit (or if specified the top of curb) and top of railing.
2. Post type guardrails, and handrails for stairs or landings more than 30 inches above grade or floor below shall have intermediate rails equally spaced such that a sphere 4 inches in diameter cannot pass through.
3. Where handrail extensions interfere with transverse walkways the horizontal portions shall not encroach but be turned away from stairs and parallel to walkway.
4. The top of guardrails for stairways, exclusive of their landings, may have a height as specified for handrails.

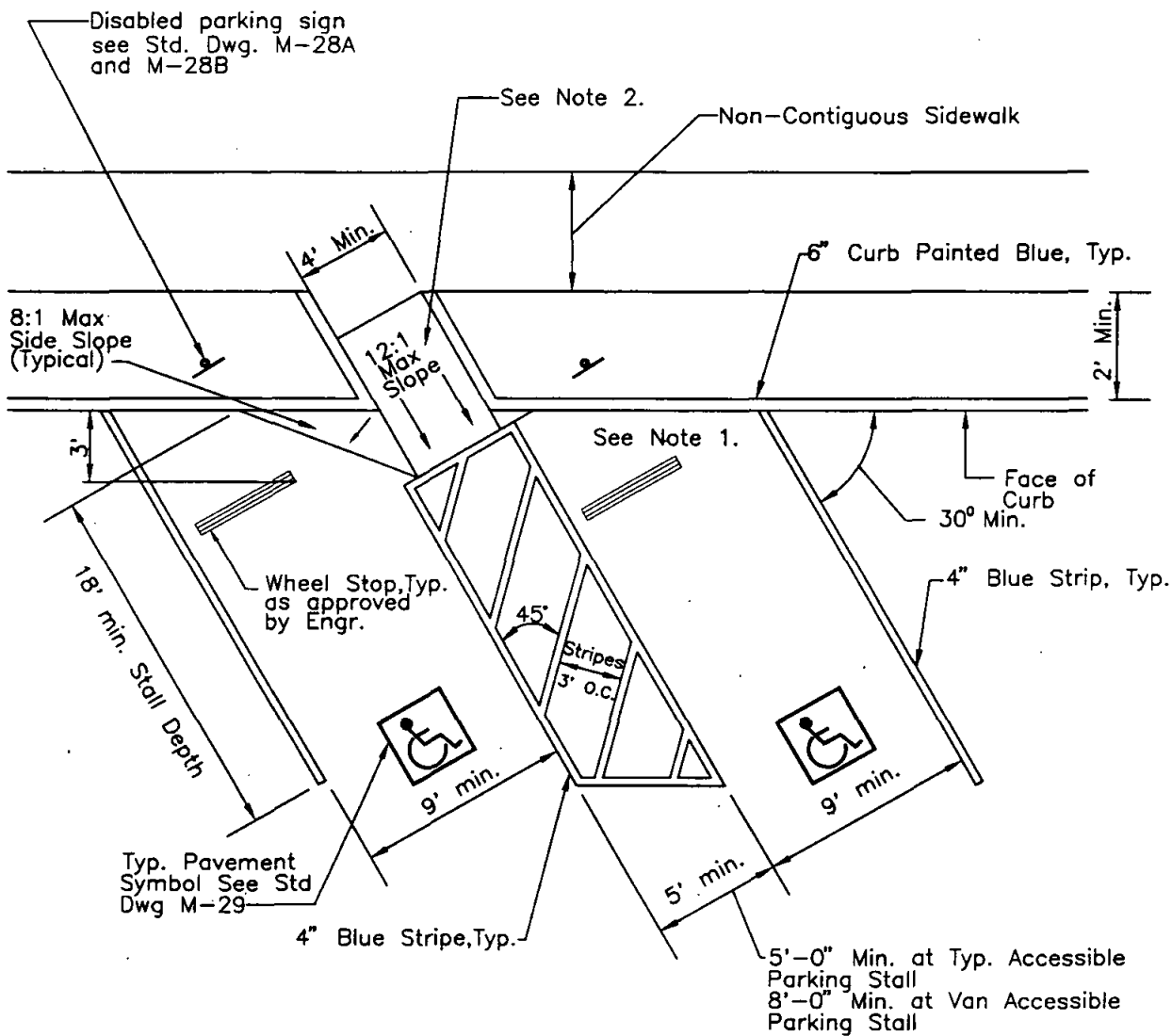
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>[Signature]</i> 2-95 Chairman R.C.E. 25902 Date
ADA Rgmt	OK	RLM	2/95		
				PEDESTRIAN PROTECTIVE RAILING DETAIL No.2	DRAWING NUMBER M-25



NOTES:

1. Provide for adequate drainage.
2. For appropriate ramp alternate to conform to topographical conditions, see Std. Dwg. G-27 through G-31.
3. Slope shall not exceed 2% in any direction unless there is equivalent facilitation.
4. Blue color should match color No. 15090 in the Federal Standard 595a as specified in Section 522(b)2.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ADA Rgmt	DA	O. M. M. 2-95	2-95				
				DISABLED PARKING STALL(S)		 Chairman R.C.E. 25902 Date	
						DRAWING NUMBER M-27A	



NOTES:

1. Provide for adequate drainage
2. See Std. Dwg G-27 through G-31.
For appropriate ramp alternate to
conform to topographical conditions.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARD COMMITTEE

Ray P. ... 2-95
Chairman R.C.E. 25902 Date

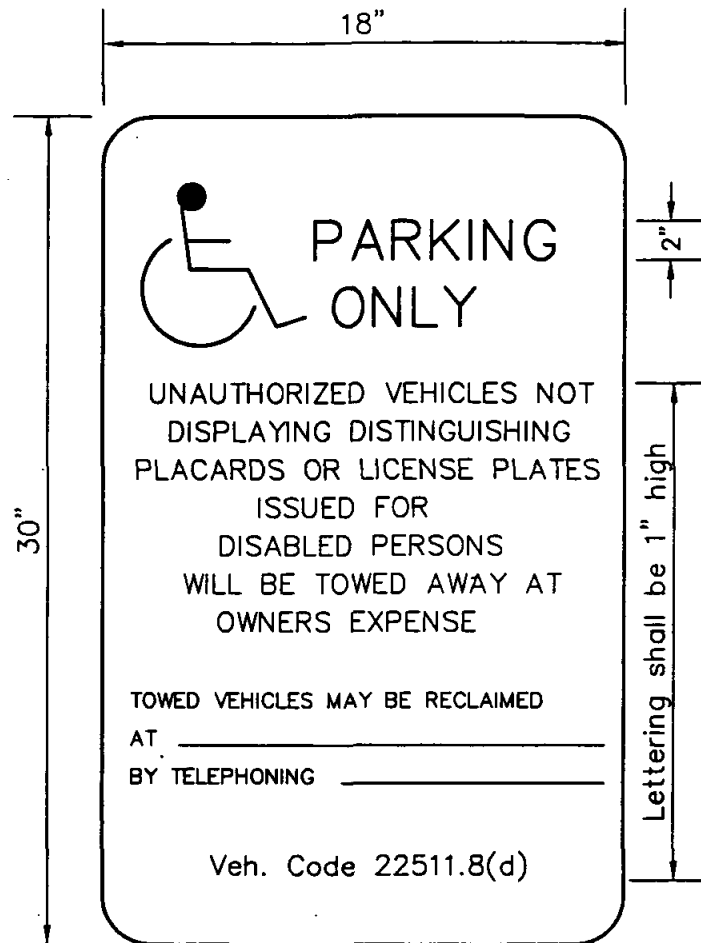
DRAWING
NUMBER

M-27B

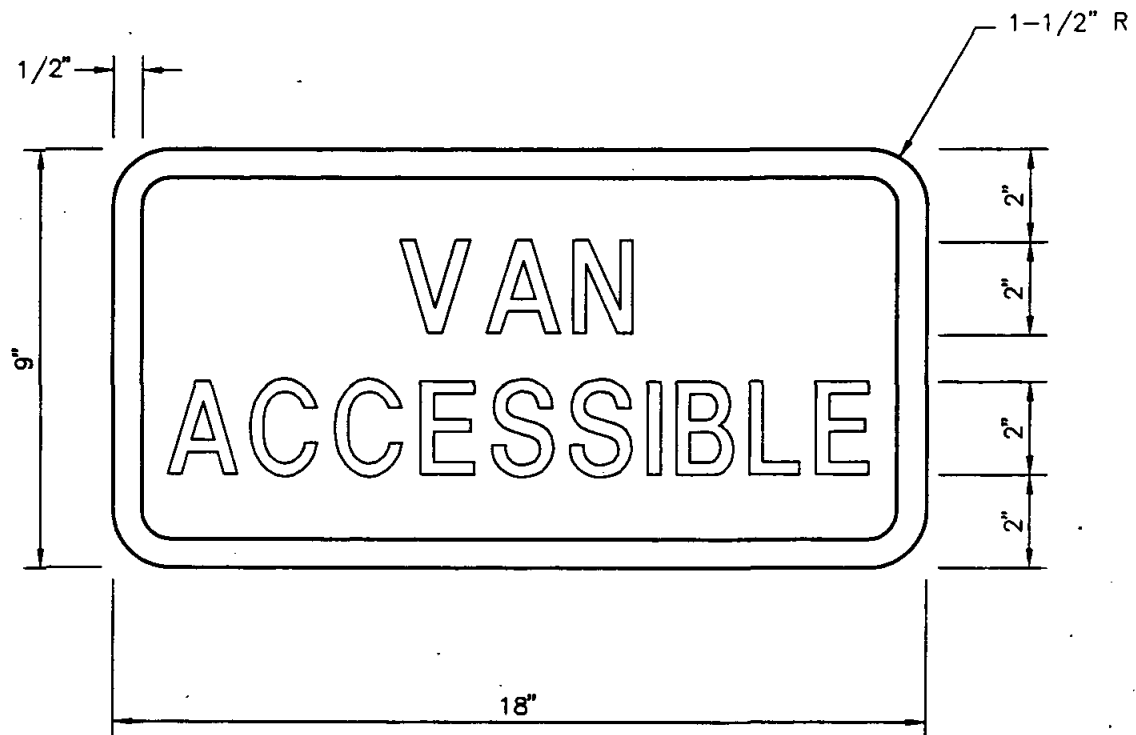
SAN DIEGO REGIONAL STANDARD DRAWING

DIAGONAL DISABLED PARKING
STALL(S)

Revision	By	Approved	Date
ADA Rgmt	0A	RLM	2/95



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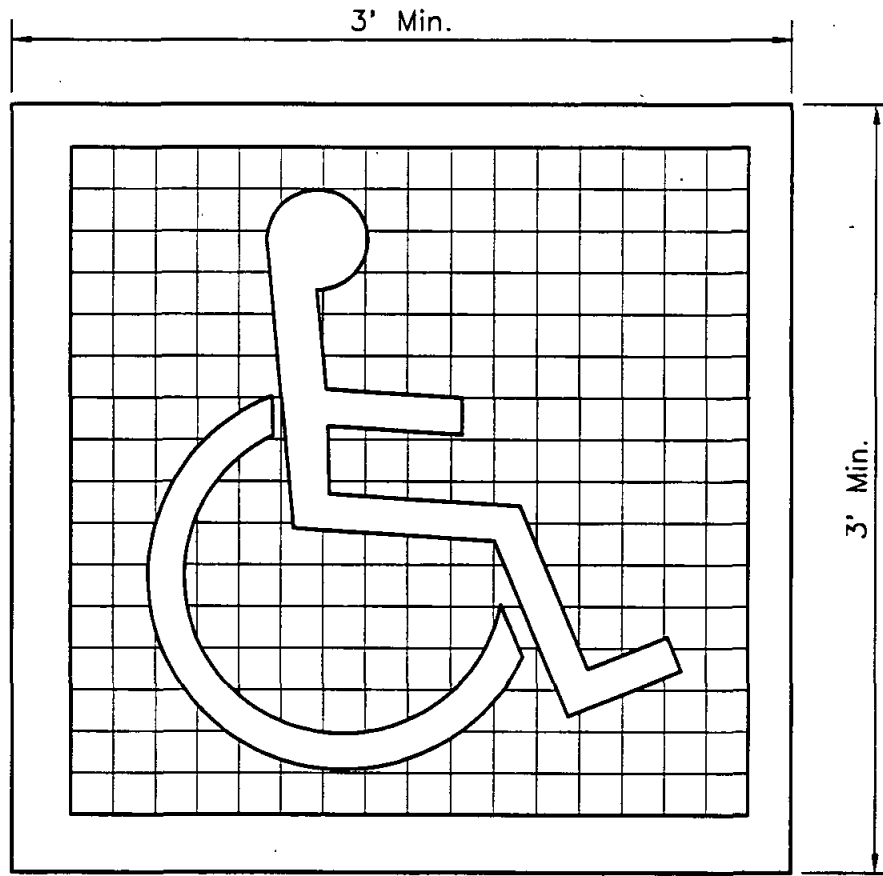


NOTES:

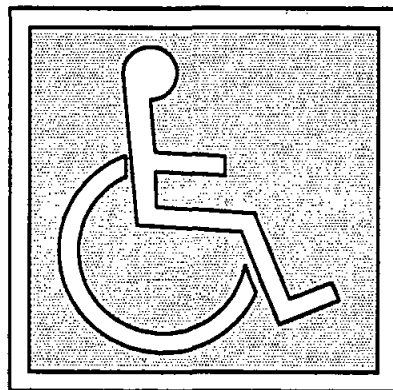
1. Sign shall be constructed of aluminum, 0.062" minimum thickness.
2. Colors: Background—Reflectorized Blue
 Border and letters— Reflectorized White
 Blue color shall match color No. 15090 in the
 Federal Standard 595a as specified in Section 522(b)2.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>[Signature]</i> 2-95 Chairman R.C.E. 25902 Date
ADA Rgmt	OK	RLM	2/95		
				VAN ACCESSIBLE SIGN FOR DISABLED PARKING SPACE	DRAWING NUMBER M-28B

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(a) SYMBOL PROPORTIONS



INTERNATIONAL SYMBOL
OF ACCESSIBILITY

(b) DISPLAY CONDITIONS

NOTES:

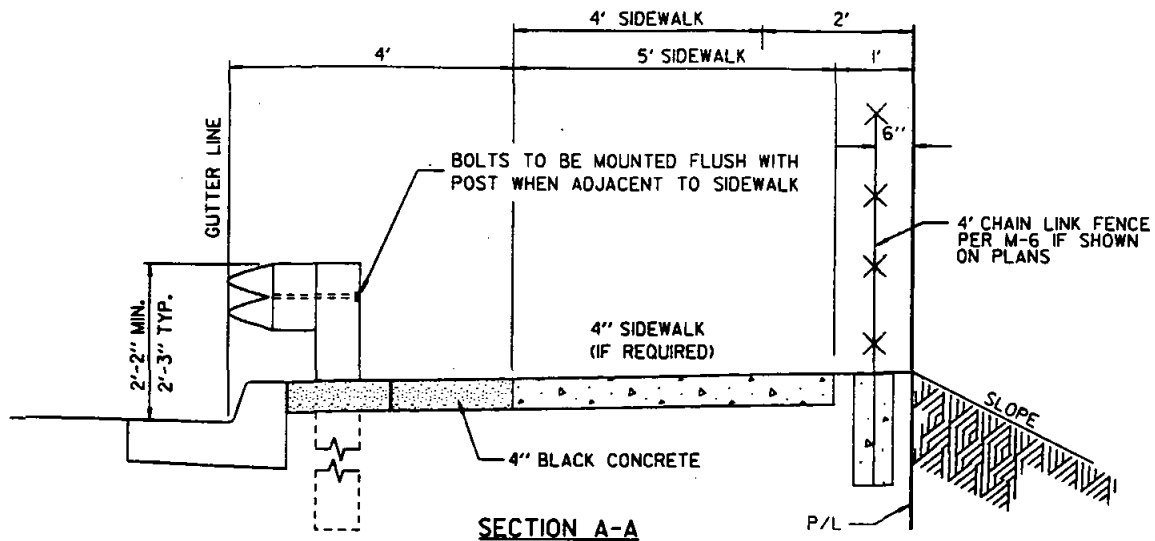
1. Pavement symbol shall be painted white on a blue background.
2. Blue color should match color No. 15090 in the Federal Standard 595a as specified in Section 522(b)2.

Revision	By	Approved	Date
ADA RQMT	01	O. Makin	2-95

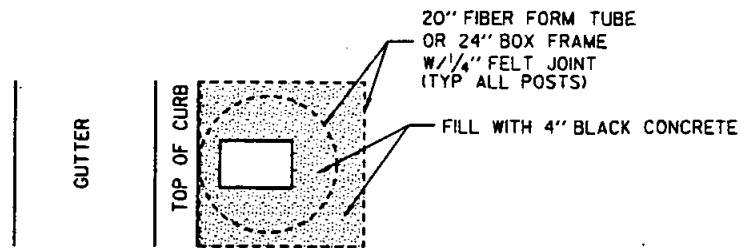
SAN DIEGO REGIONAL STANDARD DRAWING

PAVEMENT SYMBOL
DISABLED PARKING

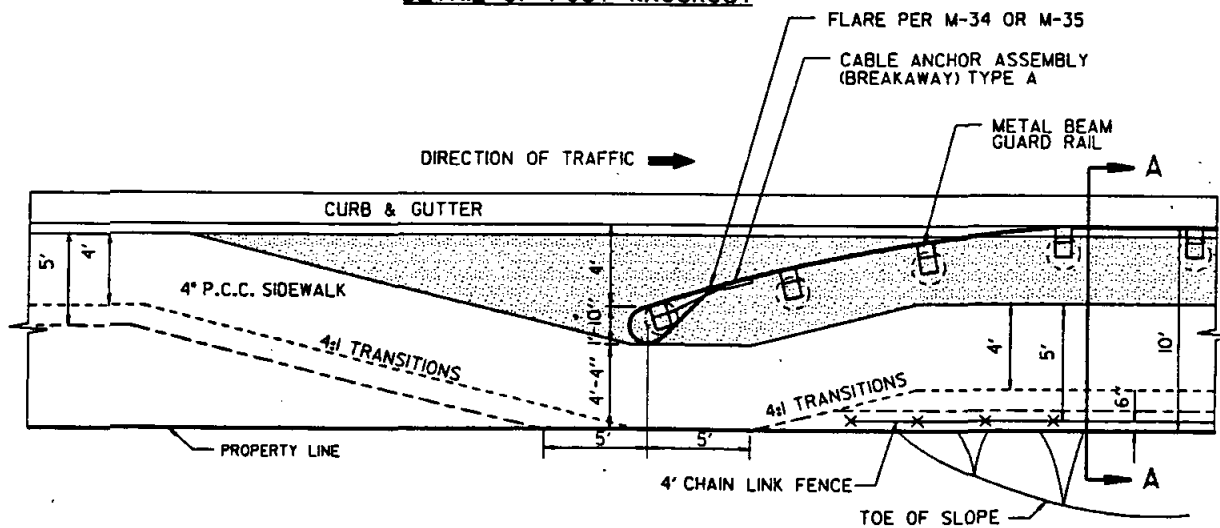
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
[Signature] 2-95
Chairman R.C.E. 25902 Date
DRAWING NUMBER M-29



TYPICAL FOR ABOVE GROUND OBSTRUCTIONS-4d
SIDEWALK TRANSITIONS
TYPICAL FOR USE WITH G-7



DETAIL OF POST KNOCKOUT



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAWING

Revision	By	Approved	Date

DRAWING NUMBER **M-30**

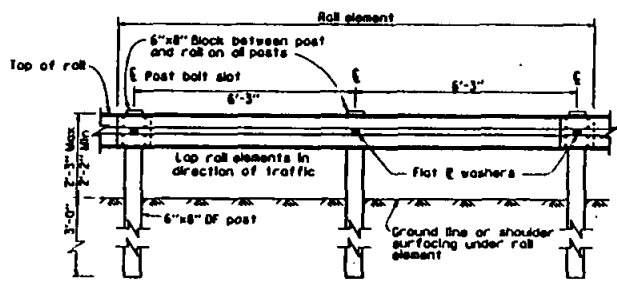
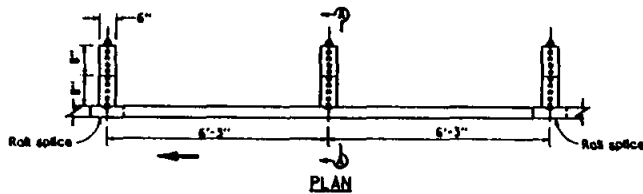
GUARD RAIL STANDARDS

Chapman *LEE* 5-11-92
Date
REF 25902

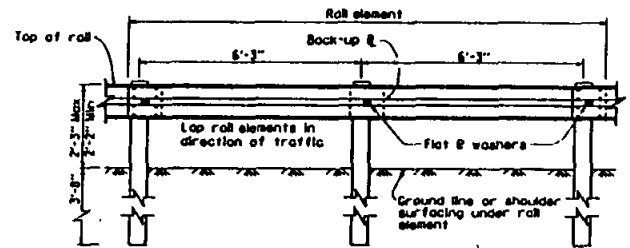
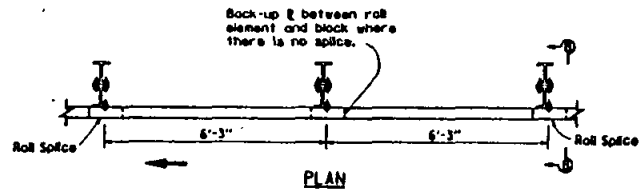
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-20-88

SAN DIEGO REGIONAL STANDARD DRAWING
METAL BEAM GUARD RAILING

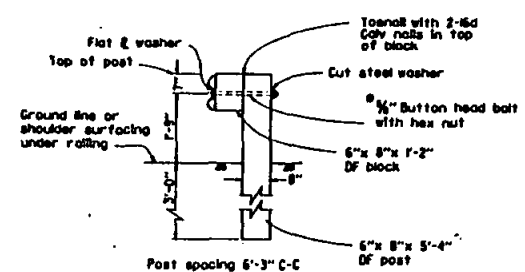
DRAWING NUMBER
M-31



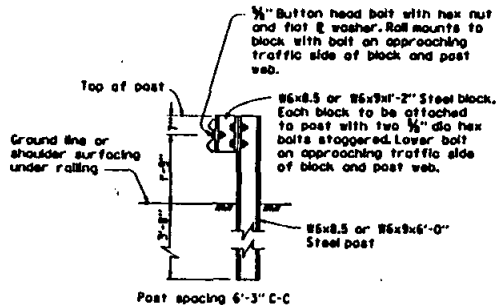
ELEVATION
METAL BEAM GUARD RAIL WITH WOOD POST AND BLOCKS



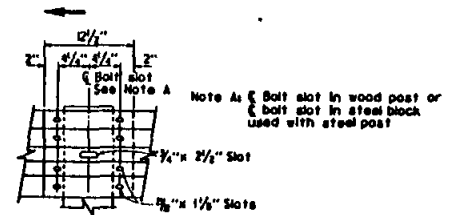
ELEVATION
**METAL BEAM GUARD RAIL WITH W6x8.5
OR W6x9 STEEL POSTS AND BLOCKS**



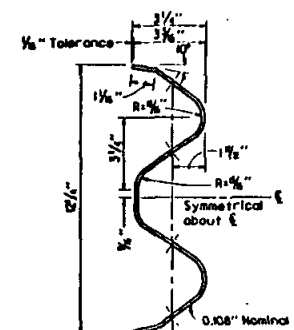
SECTION A-A
If there bolt is reversed or 3/4" threaded rod is used to mount rail, no more than 1/2" of thread may be exposed on traffic side of rail.



SECTION B-B



**RAIL SPlice DETAIL
ELEVATION VIEW**
Splice the overlapped ends of the rail elements with 3/4" x 1 1/4" button head oval shoulder bolts and 3/4" x 1 1/4" recessed hex nut in the 3/8" x 1 1/4" slots. Total 8 per rail splice 4 per terminal section and end section. Lap rail elements in direction of traffic.



**SECTION THRU
RAIL ELEMENT**

NOTES

1. For details of standard hardware used to construct guard railing, see Standard Dwg. M-32.
2. For details of posts and blocks used to construct guard railing, see Standard Dwg. M-33.
3. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
4. Top of rail to be 27" above the ground line or shoulder surfacing under the rail element.
5. For guard railing approach flares, see Standard Dwg. M-34 and M-35.
6. For embankment widening details to accommodate guard railing approach flares, see Standard Dwg. M-36.
7. For guard railing end anchor details, see Standard Dwg. M-37 and M-39.
8. For guard railing connection details to bridge railing, retaining walls and abutments, see Standard Dwg. M-40.
9. For guard railing connection details to bridge sidewalks and curbs, see Standard Dwg. M-41.
10. For dike positioning with guard railing installations, see Standard Dwg. M-38.
11. Direction of traffic indicated by →

REVISION	BY	APPROVAL	DATE

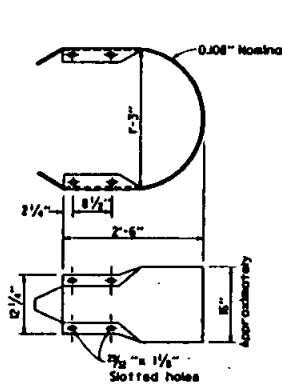
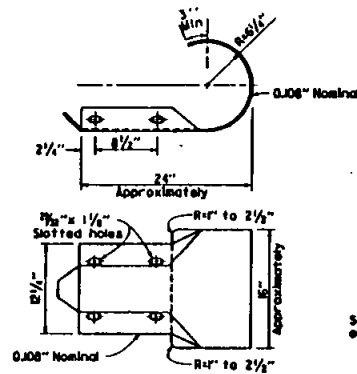
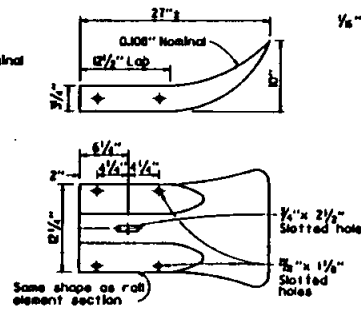
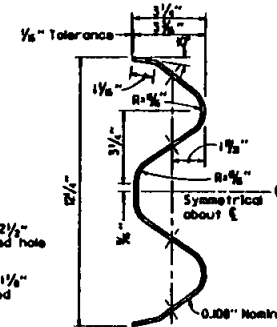
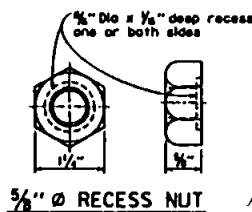
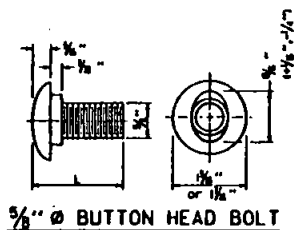
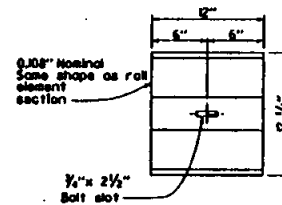
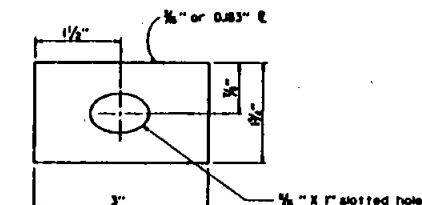
DRAWING NUMBER

M-32

SAN DIEGO REGIONAL STANDARD DRAWING

METAL BEAM GUARD RAILING STANDARD
HARDWARE**NOTES**

1. Terminal sections will not be installed on the trailing end of guard railing placed adjacent to one-way roadways.
2. Back-up plate to be used between guard rail element and steel block on steel post where there is no rail element splice. See Standard Dwg. M-31.
3. For end section details, see Standard Dwg. M-40.
4. For terminal section Type C, see Standard Dwg. M-38.

**RETURN SECTION****TERMINAL SECTION
TYPE A****TERMINAL SECTION
TYPE B****SECTION THRU
RAIL ELEMENT****5/8" Ø RECESS NUT****5/8" Ø BUTTON HEAD BOLT****BACK-UP PLATE**
See Note 2**FLAT PLATE WASHER**

L	THREAD LENGTH
1 1/4"	full thread length
2"	1 1/2" Min thread length
2 1/2"	1 3/4" Min thread length
3"	2" Min thread length

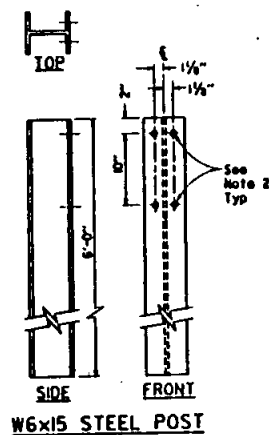
REVISION	BY	APPROVAL	DATE

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-20-92

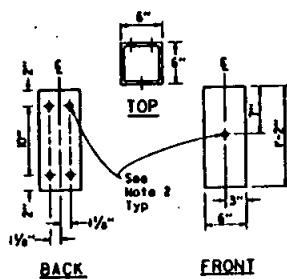
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-30-92

SAN DIEGO REGIONAL STANDARD DRAWING
METAL BEAM GUARD RAILING POSTS AND
BLOCKS

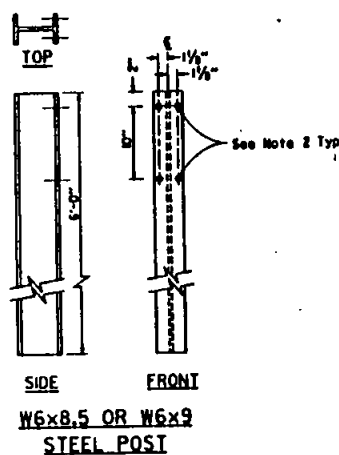
DRAWING NUMBER
M-33



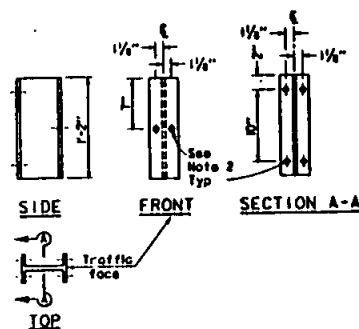
W6x15 STEEL POST



6"x6"x1'-2" (0.875" THICK)
TUBULAR STEEL BLOCK



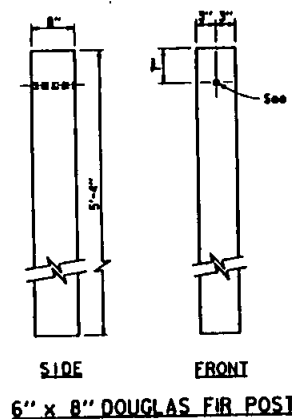
W6x8.5 OR W6x9
STEEL POST



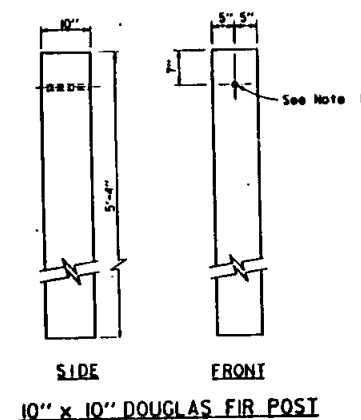
W6x8.5 OR W6x9 STEEL BLOCK

NOTES

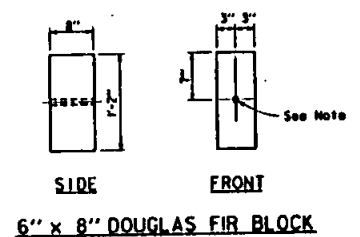
1. All holes in wood posts and blocks shall be $3/4" \pm 1/16"$.
2. All holes in steel posts and blocks shall be $13/16" \pm 0$ maximum.
3. Contractor may submit alternative steel post details for Engineer's approval.
4. Dimensions shown for wood post are nominal.



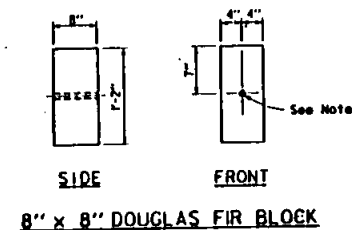
6" x 8" DOUGLAS FIR POST



10" x 10" DOUGLAS FIR POST



6" x 8" DOUGLAS FIR BLOCK

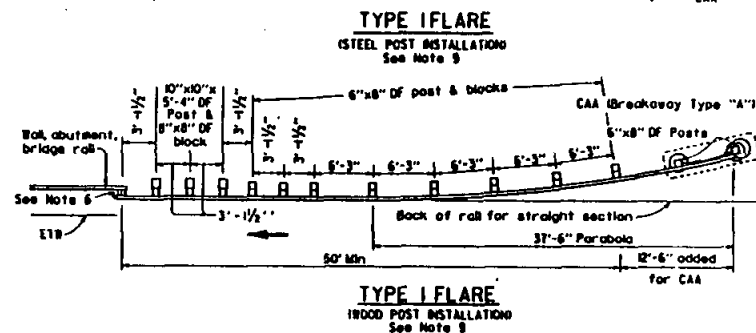
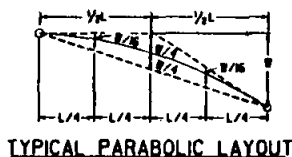
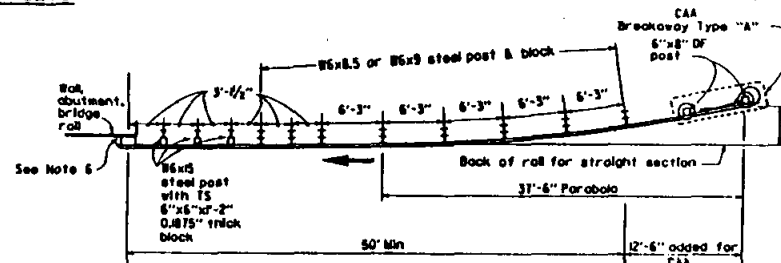
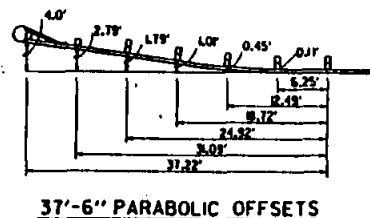
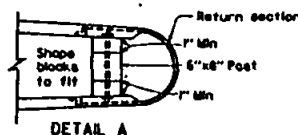


8" x 8" DOUGLAS FIR BLOCK

REVISION	BY	APPROVAL	DATE

NOTES

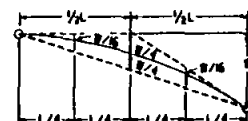
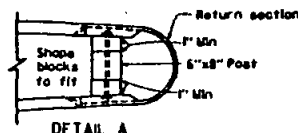
1. Post, blocks and hardware to be used are shown on Standard Dwg. M-32 and M-33.
2. Guard rail post spacing to be 8'-3" center to center, except as otherwise noted.
3. Except as noted, posts shown are 8" X 8" DF, W6 X 8.5 or W6 X 9 steel posts and blocks may be specified for 8" X 8" DF posts and blocks where applicable. Where 10" X 10" DF posts and 8" X 8" DF blocks are shown, W6 X 15 steel posts and Tubular Steel 6" X 6" X 1'-2" (0.1875" thick) blocks may be specified where applicable.
4. Top of rail to be 27" above ground line or shoulder surfacing under the rail element.
5. Direction of traffic indicated by →
6. For connection details see Standard Dwg. M-40 or M-41.
7. For end and anchor details see Standard Dwg. M-37 and M-39.
8. Terminal Sections will not be installed on trailing end of guard rail placed adjacent to one-way roadways.
9. Parabola portion of Type I Flare used at approach end of guard railing for embankment installations.
10. For embankment widening details to accommodate approach flares, see Standard Dwg. M-38.
11. Sand filled crush cushion, as approved by the Engineer is required for Type 2, 3, and 4 flares, when the end of the guard rail is within 30 feet of the edge of traveled way (ETW) of approaching traffic.



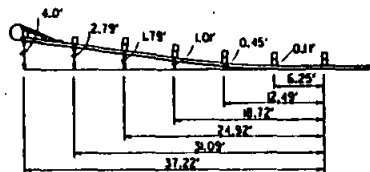
REVISION	BY	APPROVAL	DATE

1. Post, blocks and hardware to be used are shown on Standard Dwg. M-31 and M-32.
2. Guard rail post spacing to be 6'-3" center to center, except as noted.
3. Except as noted, posts shown are 6" X 8" DF, W8 X 8.5 or W8 X 9 steel posts and blocks may be specified for 6" X 8" DF posts and blocks where applicable.
Where 10" X 10" DF posts and 8" X 8" DF blocks are shown, W8 X 15 steel posts and Tubular Steel 6" X 6" X 1'-2" (0.1875" thick) blocks may be specified where applicable.
4. Top of rail to be 27" above ground line or shoulder surfacing under the rail element.
5. A 4' minimum clearance is required between face of rail and a fixed object located directly behind a guard rail post. A fixed object located behind the rail but not behind a guard rail post requires a 3' minimum clearance.
Where minimum clearance cannot be obtained use approach railing transition details for fixed objects.

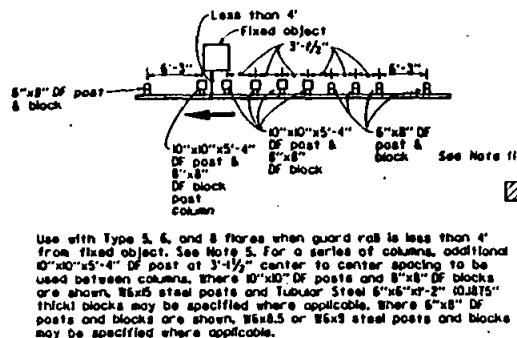
6. Direction of traffic indicated by →
7. For connection details see Standard Dwg. M-40.
8. For end and anchor details see Standard Dwg. M-37 and M-39.
9. Terminal Sections will not be installed on trailing end of guard rail placed adjacent to one-way roadways.
10. Type 7 flare has been deleted.
11. Sand filled crash cushion, as approved by the Engineer is required for Type 6 and 8 flares, when the end of the guard rail is within 30 feet of the edge of traveled way (ETW) of approaching traffic.



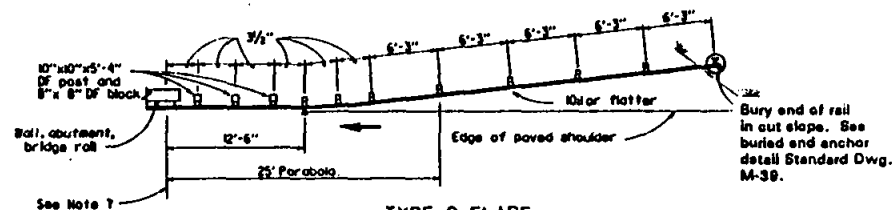
TYPICAL PARABOLIC LAYOUT



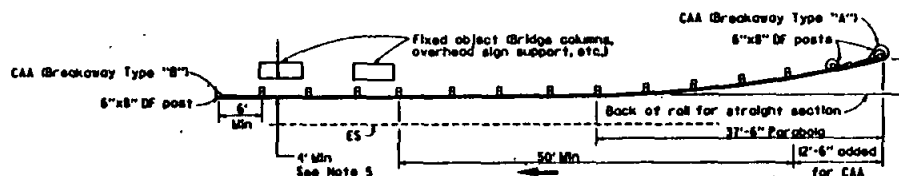
37'-6" PARABOLIC OFFSETS



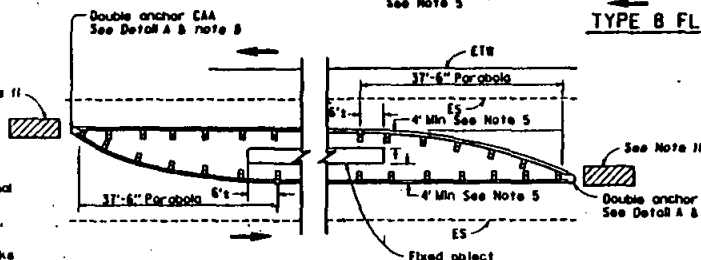
APPROACH RAILING TRANSITION DETAIL FOR FIXED OBJECT



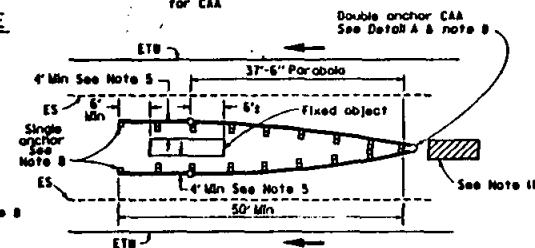
TYPE 9 FLARE



TYPE B FLARE



TYPE 5 FLARE



TYPE 6 FLARE

CAA = Cable Anchors Assembly
ETW = Edge of Traveled Way

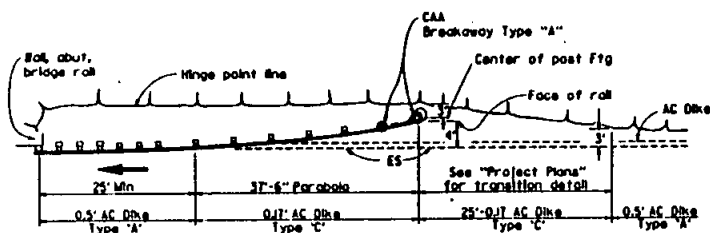
REVISION	BY	APPROVAL	DATE

METAL BEAM GUARD RAILING MISCELLANEOUS

DRAWING NUMBER

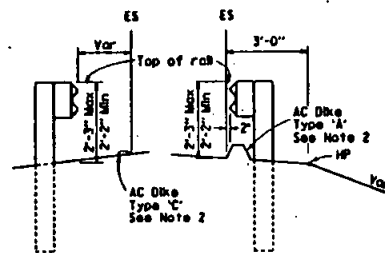
SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE *4-30-91*
[Signature]
COORDINATOR R.C.E. 25902 DATE



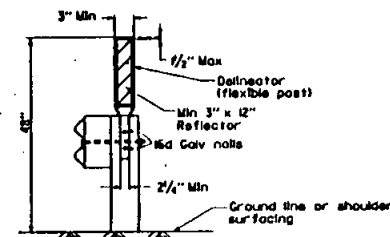
EMBANKMENT WIDENING AND DIKE PLACEMENT DIAGRAM

See Note 1 and 2



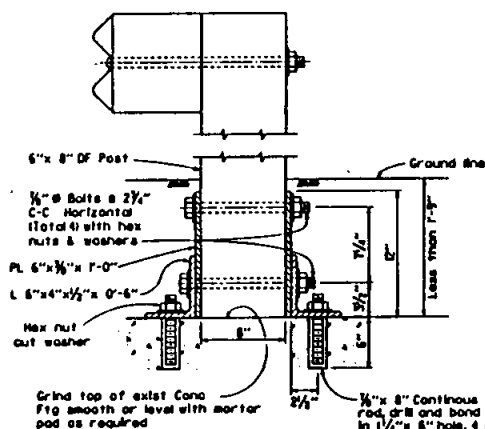
DIKE POSITIONING

(See Note 2)

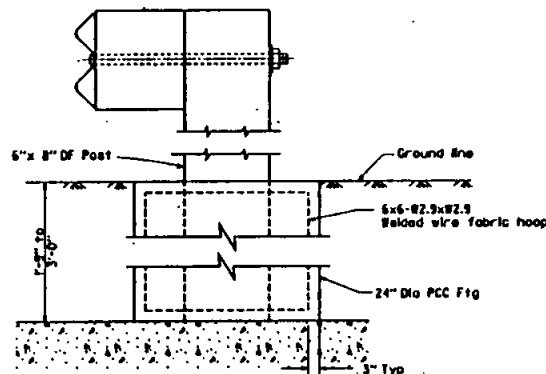


GUARD RAILING DELINEATION

See Note 4



DETAIL A

**DETAIL B**

Form socket in concrete to receive 6"x8" post or place concrete around 6"x8" post wrapped with one layer of 1/2" thick expanded polystyrene foam sheathing. Do not nail polystyrene to post. Post to be centered in concrete footing.

POST FOOTINGS

(See note 3)

Use where standard embedment of railing post is restricted by underground concrete facilities such as footing of walls, columns, etc. Use Detail A where embedment of post is less than 1'-0". Use Detail B where embedment of post is between 1'-0" and 3'-0".

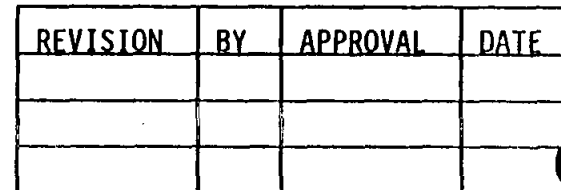
NOTES

1. For guard rail flare details, see Standard Dwg. M-34 and M-35.
2. When necessary to place dike in front of guard rail, only Type "C" dike may be used. For dike details see Standard Dwg. G-6.
3. For standard railing post embedment see Standard Dwg. M-31.
4. Guard railing delineation to be used when required by special provisions.
5. Direction of traffic indicated by →

REVISION	BY	APPROVAL	DATE

MI-37

DRAWING NUMBER



DRAWING NUMBER

SAN DIEGO REGIONAL STANDARD DRAWING

GUARD RAIL END ANCHORS
(BREAKAWAY HARDWARE)

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
4-20-88
COORDINATOR R.C.E. 25902 DATE



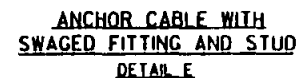
DETAIL A



DETAIL C



DETAIL B



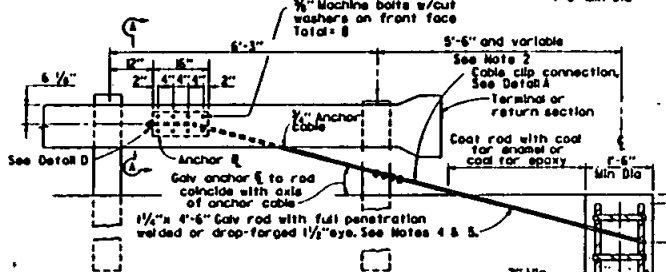
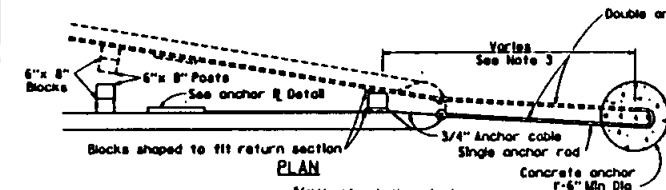
REVISION	BY	APPROVAL	DATE

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-20-92

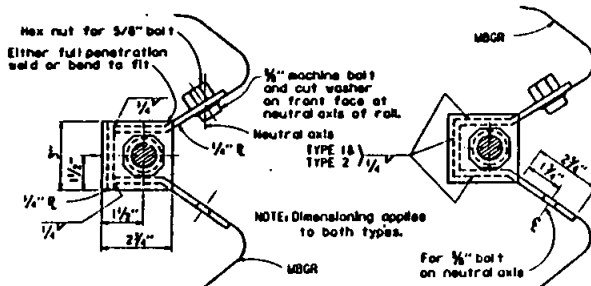
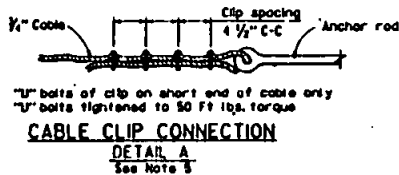
SAN DIEGO REGIONAL STANDARD DRAWING
BARRIER AND GUARD RAIL END ANCHORS

DRAWING NUMBER

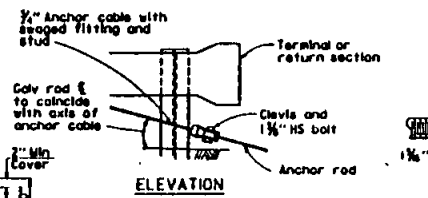
M-39



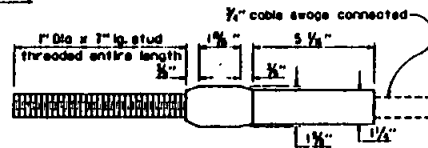
ELEVATION
CABLE ANCHOR ASSEMBLY
(WOOD POST GUARD RAIL SHOWN)



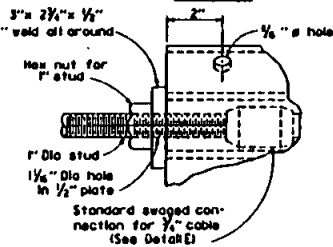
SECTION A-A
(ALTERNATIVE TYPE 2)
ANCHOR PLATE DETAILS



ELEVATION
CLEVIS AND BOLT CONNECTION
DETAIL B
(STEEL POST GUARD RAIL SHOWN)
See Note 3



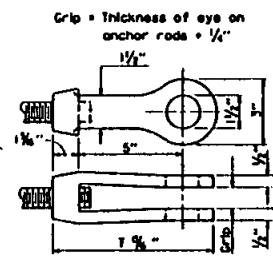
ANCHOR CABLE WITH
SWAGED FITTING AND STUD
DETAIL E



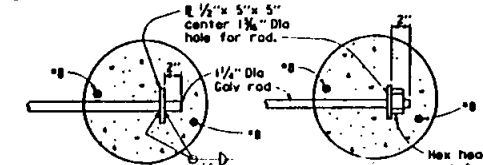
DETAIL D

NOTES

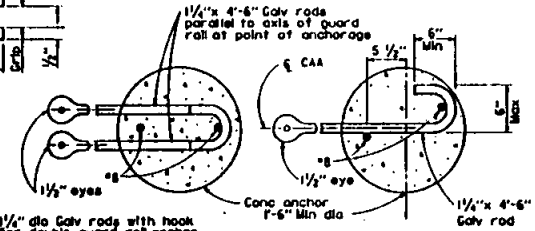
1. For typical use of end anchors shown on this plan, See Standard Drawings M-34 and M-35.
2. Anchor cable to be parallel to guard rail for straight runs of rail. Anchor cable may have angle point at anchor plate if guard rail is curved.
3. 5'-8" with terminal section. May be less than with return sections if separate rods connect to concrete anchor.
4. Anchor rod hooks to be in contact with anchor reinforcement when concrete is placed. Wire ties may be used to position anchor rods.
5. Cable clip connection (Detail A) or clevis and bolt connection (Detail B) to be used with wood post guard railing installation. For steel post guard railing installations, clevis and bolt connection (Detail B) is to be used. Other alternative for attaching cable to anchor rod must be approved by the Engineer.



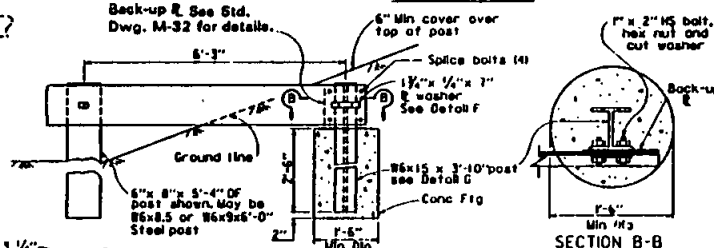
CLEVIS



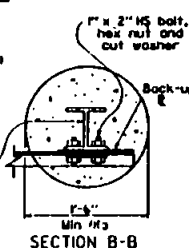
OPTIONAL SINGLE ANCHOR ROD END DETAILS



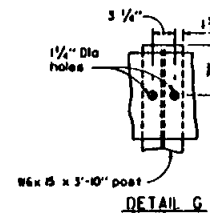
DOUBLE ANCHOR
ANCHOR RODS
SINGLE ANCHOR



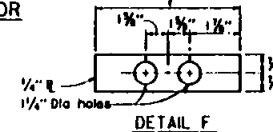
BURIED POST ANCHOR



SECTION B-B



DETAIL G



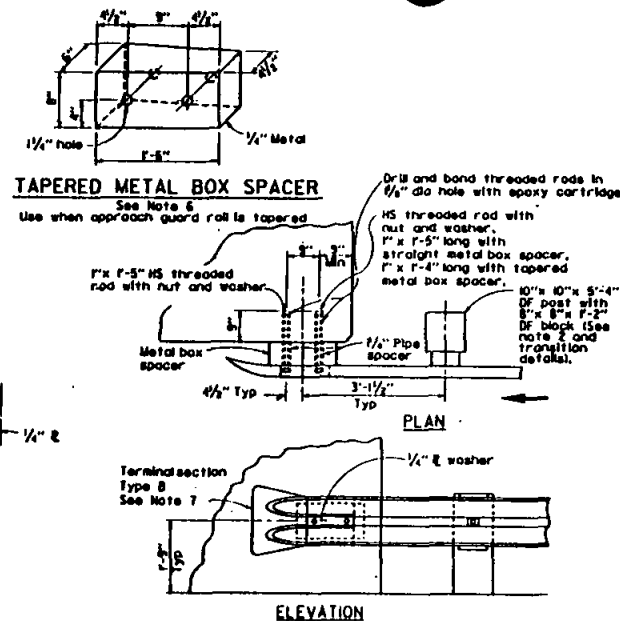
DETAIL F

REVISION	BY	APPROVAL	DATE

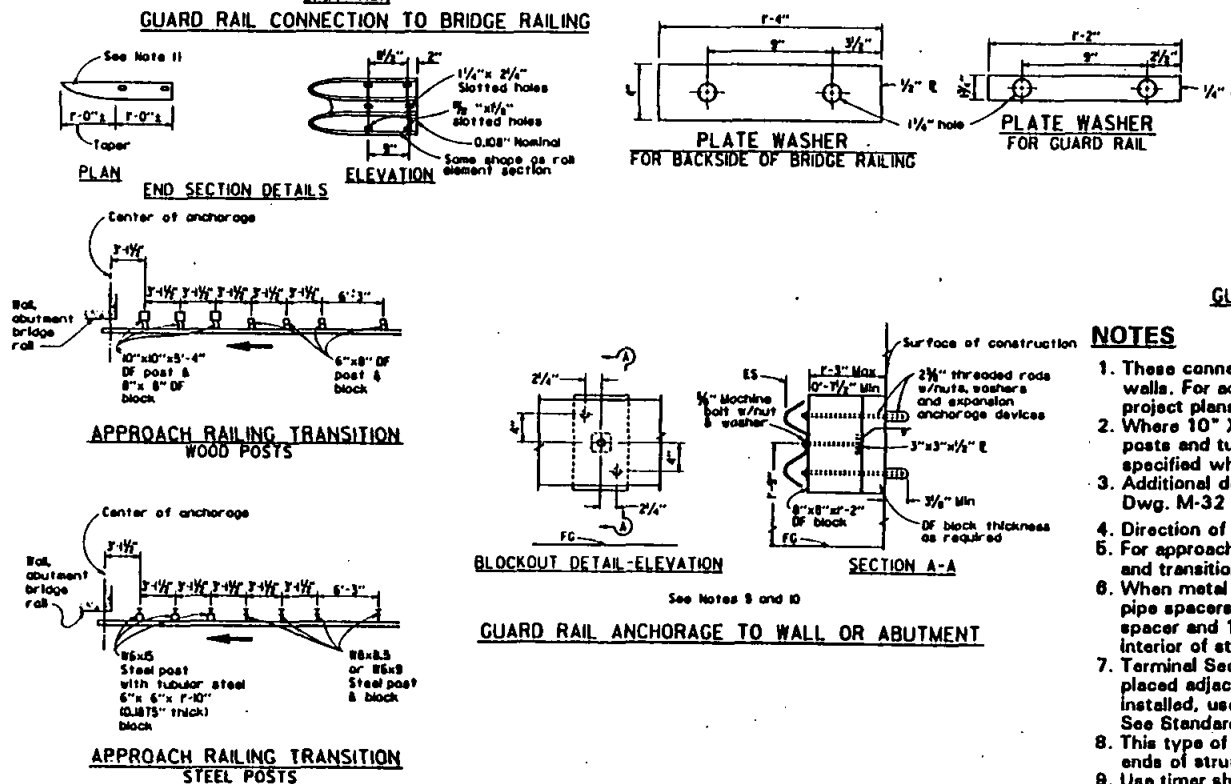
GUARD RAIL CONNECTIONS TO BRIDGE RAILS, RETAINING WALLS AND ABUTMENTS

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
Heidi Paulson 4-20-93
COORDINATOR R.C.E. 25902 DATE

SAN DIEGO REGIONAL STANDARD DRAWING



GUARD RAIL CONNECTION TO WALL OR ABUTMENT FACE



NOTES

1. These connection details apply to bridge rails, abutments and retaining walls. For additional connection details for bridge railing, see the project plans.
2. Where 10" X 10" DF post and 8" X 8" DF blocks are shown, W6 X 15 steel posts and tubular steel 6" X 6" X 1'-2" (0.1875" thick) blocks may be specified where applicable.
3. Additional details of post, blocks and hardware are shown on Standard Dwg. M-32 and M-33.
4. Direction of traffic indicated by →
5. For approach railing details, see Type I Flare on Standard Dwg. M-34 and transition details on this plan.
6. When metal box spacer is installed, place 1-1/4" X 5" and 1-1/4" X 4" pipe spacers on 1" bolts passing through interior of tapered box spacer and 1-1/4" X 5-1/4" pipe spacers on 1" bolts passing through interior of straight box spacer.
7. Terminal Sections will not be installed on trailing end of guard rail placed adjacent to one-way roadways. When terminal section is not installed, use backup plate between rail element and metal box spacer. See Standard Dwg. M-32 for backup plate details.
8. This type of connection may be used for both the approach and departing ends of structures on roadways 28 feet or less in width.
9. Use timer shims without posts where rail to wall or abutment clearance is less than 15 inches.
10. Do Not attach rail to bridge columns. Use separate posts as shown on Standard Dwg. M-35.
11. End sections may be cut from Type B terminal section or fabricated.

REVISION	BY	APPROVAL	DATE

COORDINATOR R.C.E. 25902 DATE

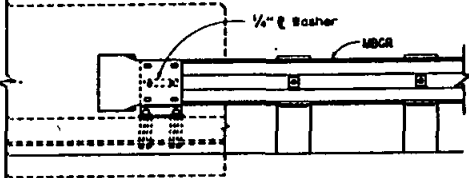
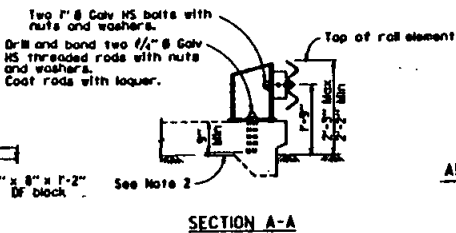
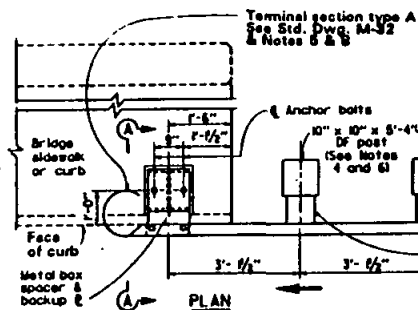
**GUARD RAIL CONNECTION TO BRIDGE
SIDEWALK AND CURBS**

M-41

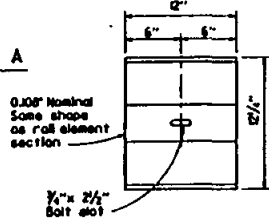
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAWING

DRAWING NUMBER



ELEVATION
CONNECTION DETAIL A
See Note 2



BACK-UP PLATE

For use between guard roll element
and metal box spacer

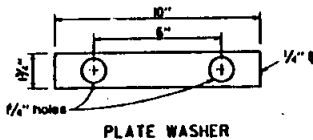
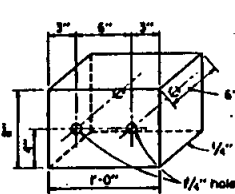
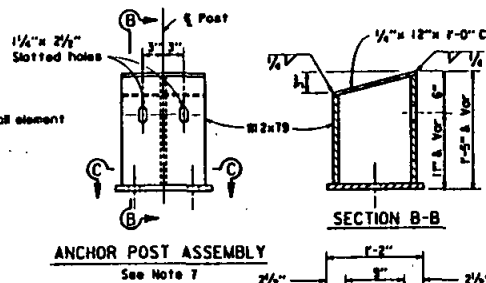


PLATE WASHER



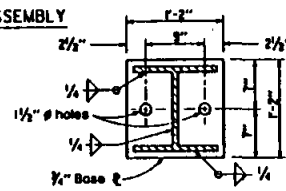
METAL BOX SPACER

Place $\frac{1}{4}$ " x $5\frac{1}{4}$ " pipe spacers
on 1" bolts passing through box interior



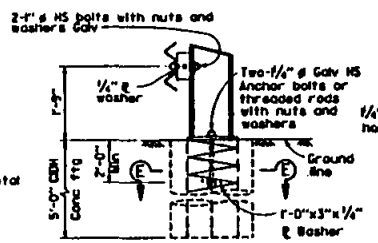
ANCHOR POST ASSEMBLY

See Note 7

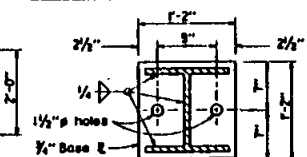


SECTION C-C

ANCHOR POST DETAILS
(FOR CONNECTION DETAIL A)

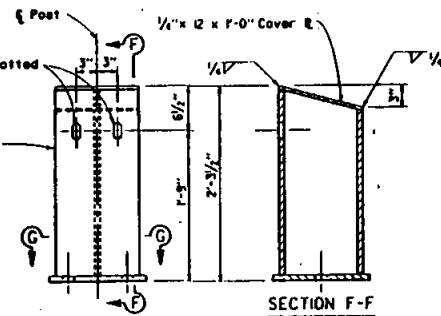


SECTION D-D



SECTION G-G

ANCHOR POST DETAILS
(FOR CONNECTION DETAIL B)



ANCHOR POST ASSEMBLY

See Note 7

- ## NOTES

1. Connection Details A and B apply to the traffic approach end of bridges. For departure end of bridges, see Connection Detail C.
2. When curb or sidewalk depth is less than 9", use Connection Detail B.
3. Direction of traffic indicated by →
4. For approach railing details, see Type I Flare on Standard Dwg. M-34,
5. Terminal sections will not be installed on the trailing end of approach guard rail placed adjacent to one-way roadways.
6. Where 10" X 10" DF posts and 8" X 8" DF blocks are shown, W8 X 16 steel posts and Tubular Steel 6" X 6" X 1'-2" (0.1875" thick) blocks may be specified where applicable.
7. Rail post assembly to be galvanized after fabrication.
8. Terminal section Type A to be used where pedestrian traffic is present.
9. For additional connection details for bridge barrier railings, see the project plans.

REVISION	BY	APPROVAL	DATE

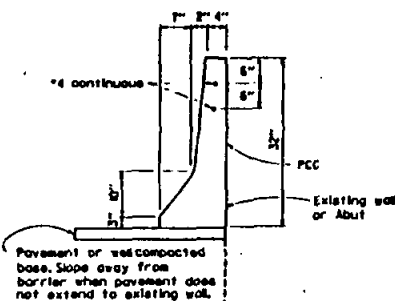
M-42

DRAWING NUMBER

CONCRETE BARRIER TYPE 50

SAN DIEGO REGIONAL STANDARD DRAWING

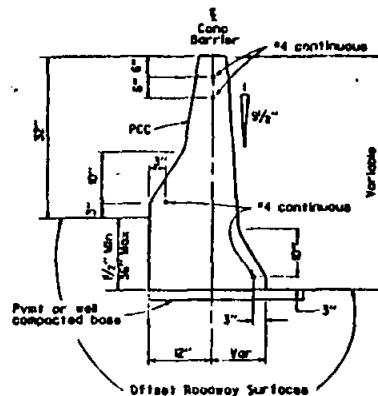
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-30-99



CONCRETE BARRIER

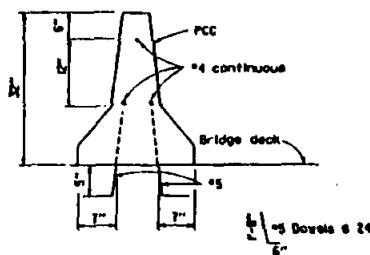
TYPE 50D

Details similar to Type 50 except as noted



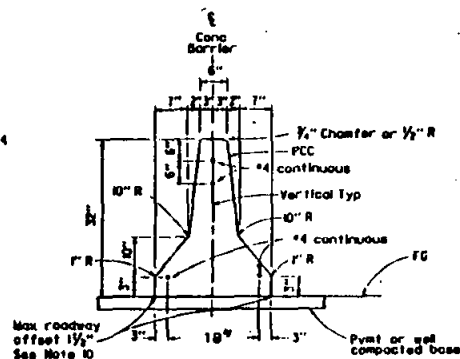
CONCRETE BARRIER

TYPE 50C

Details similar to Type 50 except as noted
Barrier End Anchor when necessary

CONCRETE BARRIER

TYPE 50A

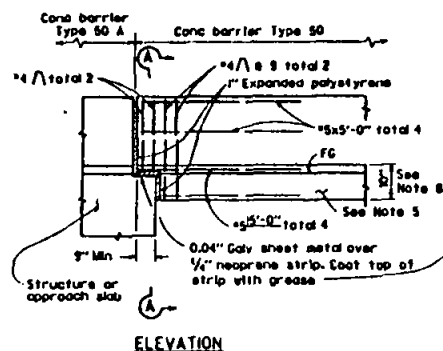
Details similar to Type 50 except as noted
See Note 1

CONCRETE BARRIER

TYPE 50

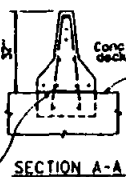
NOTES

1. See Standard Dwg. M-32 for concrete barrier transitions at bridge column and sign pedestals.
2. Opening into existing drainage inlets shall not extend above the 3-inch vertical face at bottom of the barrier.
3. Where the barrier is added to the face of an existing concrete structure, matching existing weep holes.
4. Contractor may submit alternative details for Engineer's approval.
5. Footing monolithic or dowelled with 2-#8X0'-8" @ 24". Required at barrier ends and at interruptions in barrier.
6. See Standard Dwg. M-33 for glare screen details.
7. Expansion joints in concrete barrier shall be located at all deck, pavement and principal wall joints. Expansion joint filler material shall be the same size as joint or 1/2" minimum.
8. 10" Barrier footing extends 10' back from structure.
9. For transition to TBB see Standard Dwg. M-34.
10. Where roadway offset is greater than 1-1/2", see Concrete Barrier Type 50C.
11. Barrier delineation to be used when required by the special provisions.
12. Spacing of barrier markers to match spacing of raised pavement markers on the adjacent median edgeline pavement delineation.

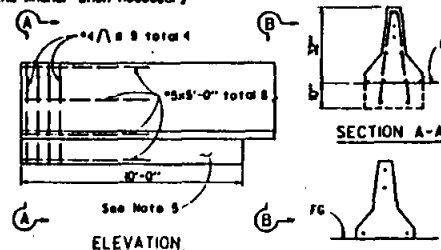


ELEVATION

CONNECTION TO STRUCTURE



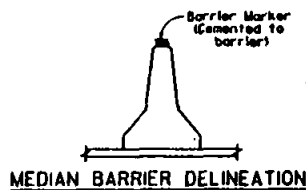
SECTION A-A



ELEVATION

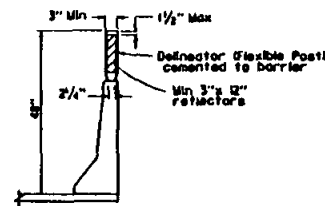
BARRIER END ANCHOR

See Note 5



MEDIAN BARRIER DELINEATION

See Notes 11 and 12



CONCRETE BARRIER DELINEATION

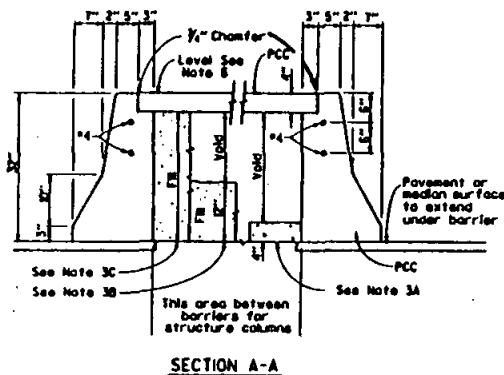
For barriers not located in median
See Note 11

REVISION	BY	APPROVAL	DATE

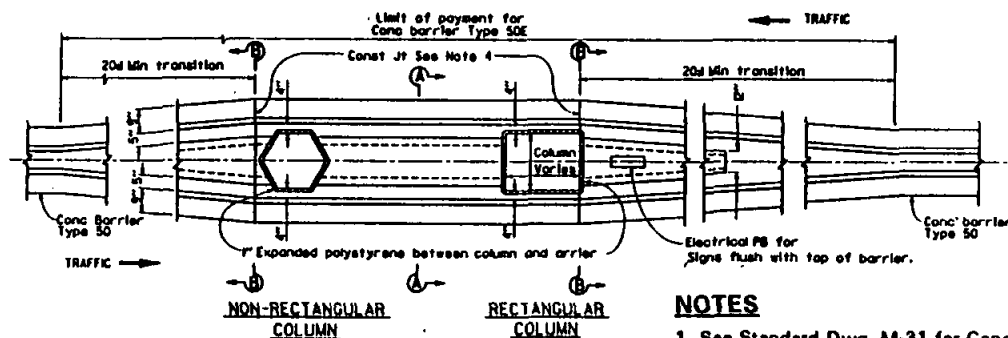
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-30-92

SAN DIEGO REGIONAL STANDARD DRAWING
CONCRETE BARRIER TYPE 50E

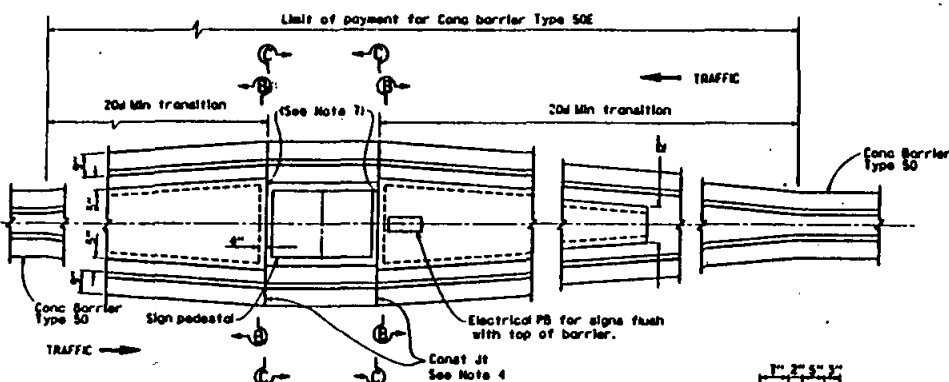
DRAWING NUMBER
M-43



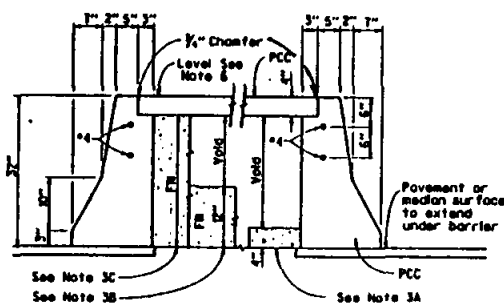
SECTION A-A



TRANSITION AT BRIDGE COLUMN
CONCRETE BARRIER TYPE 50E



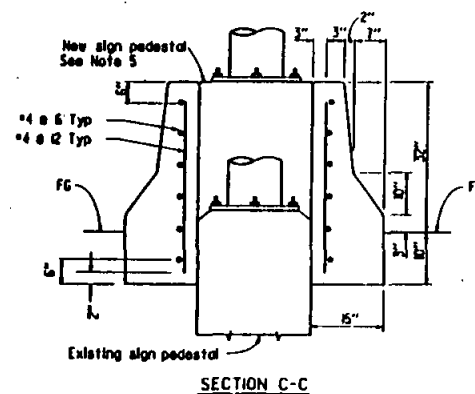
TRANSITION AT SIGN PEDESTAL
CONCRETE BARRIER TYPE 50E



SECTION B-B

NOTES

1. See Standard Dwg. M-31 for Concrete barrier Type 50.
2. See Standard Dwg. M-33 for Headlight glare Screen Details.
3. Contractor options for fill between barrier walls:
A: Place 4" PCC at base between barrier walls.
B: Place 12" of granular material at base between walls.
C: Place granular material from base to bottom of 4" cap.
Forming material for 4" cap may remain in place.
4. Reinforcing steel shall extend continuous through construction joints.
5. See "Overhead Sign" plans for sign pedestal elevations on new construction.
6. Adjust height of barrier on low side of offset or superelevated roadways to provide level grade across top of Type 50E Barrier.
7. 4" PCC vertical walls at existing sign pedestals.



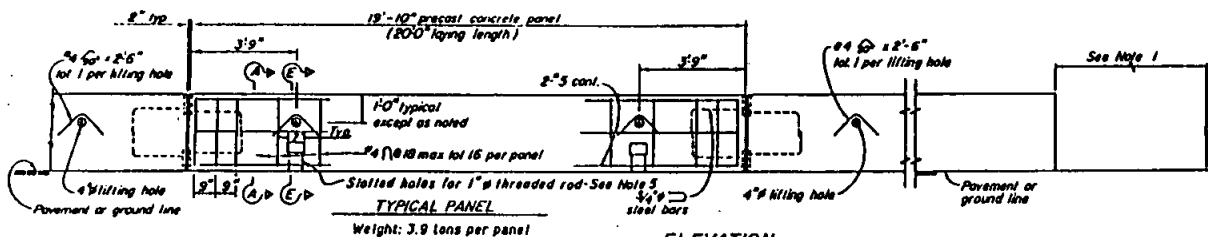
SECTION C-C

REVISION	BY	APPROVAL	DATE

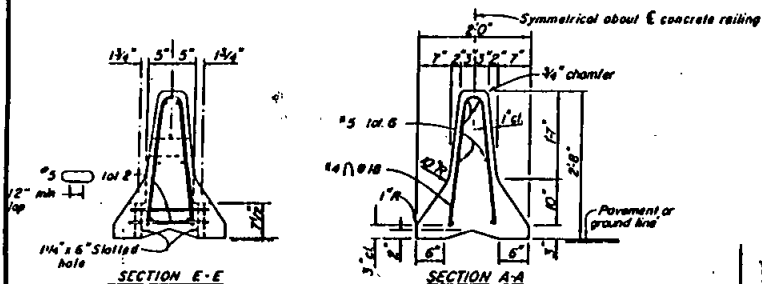
DRAWING NUMBER

SAN DIEGO REGIONAL STANDARD DRAWING

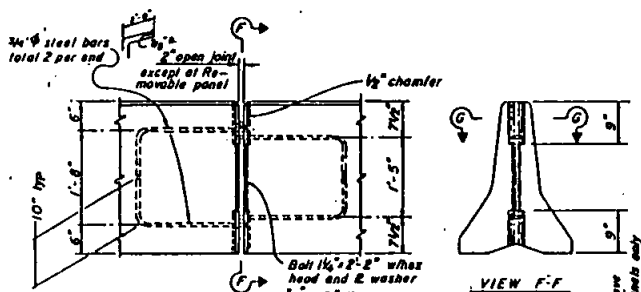
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE 4-20-92
[Signature]
COORDINATOR R.C.E. 25902 DATE



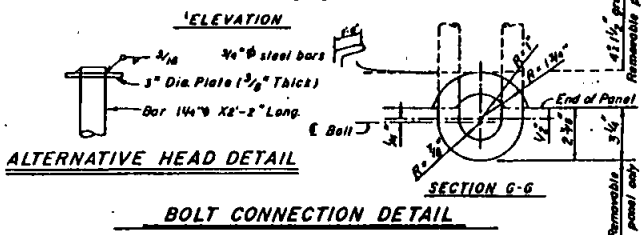
ELEVATION



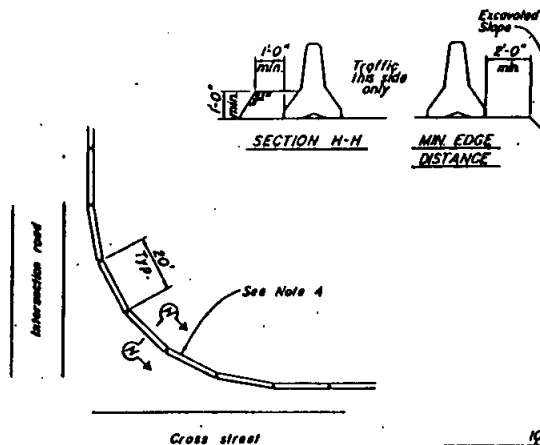
SECTION E-E



VIEW F-F

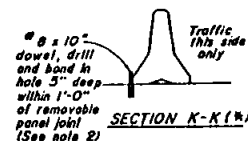


BOLT CONNECTION DETAIL



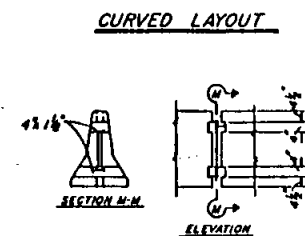
SECTION H-A

MIN. EDGE
DISTANCE



SECTION K-K (*)

* Section K-K is for P.C.C. pavement. Alternative detail, 1" ϕ pins 2'-0" long driven in A.C. or firm soil permitted, minimum 1'-6" deep.

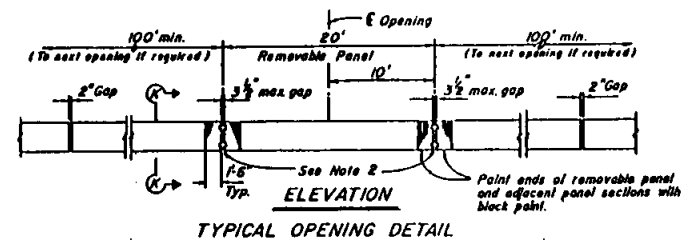


CURVED LAYOUT

SECTION M-M

ELEVATION

REMOVABLE PANEL GROOVE DETAILS

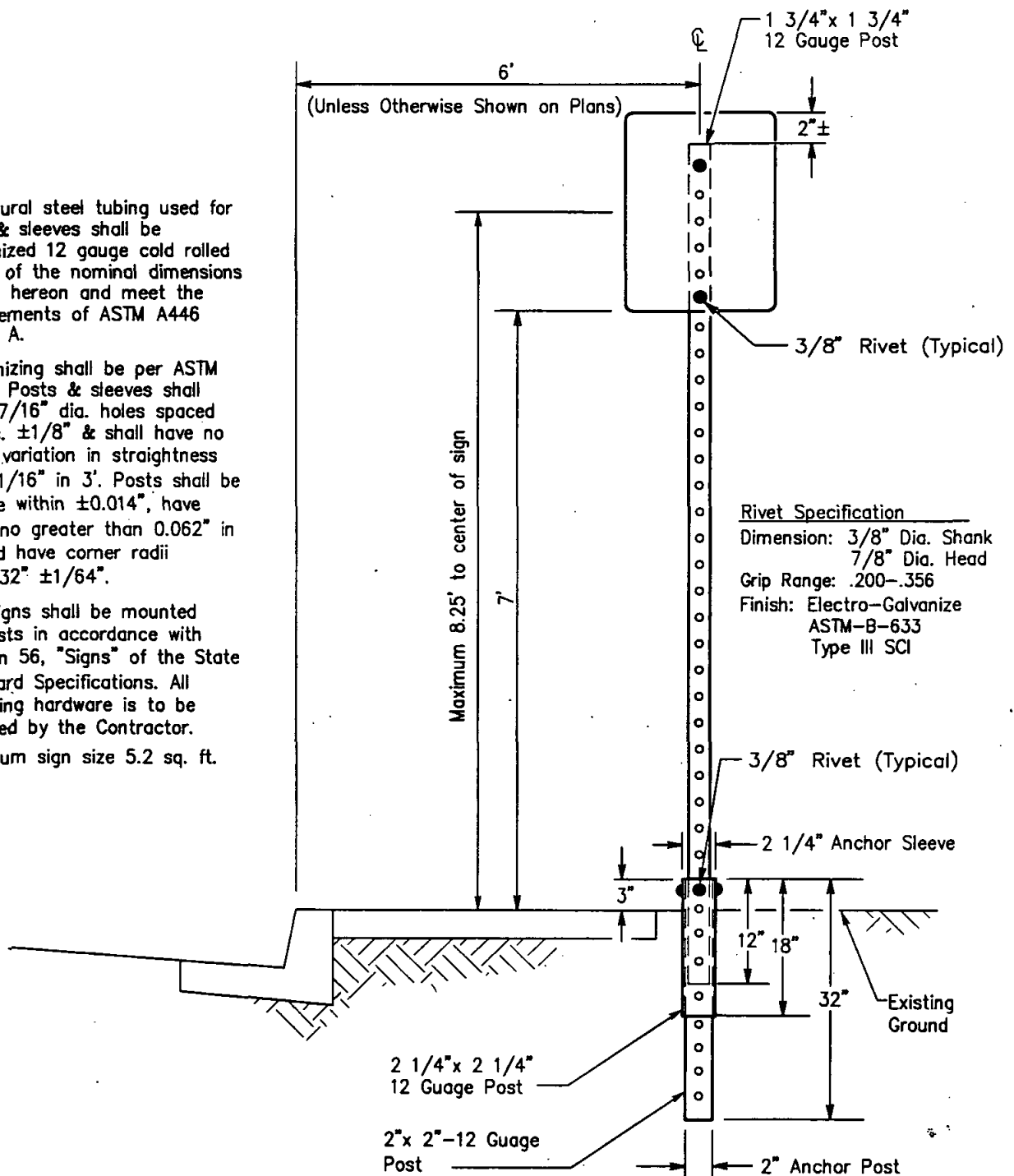


TYPICAL OPENING DETAIL

REVISION	BY	APPROVAL	DATE

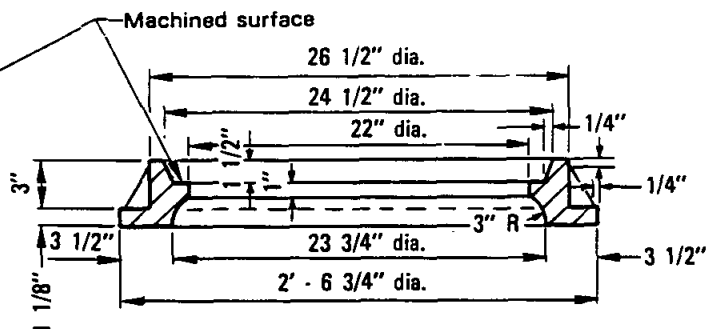
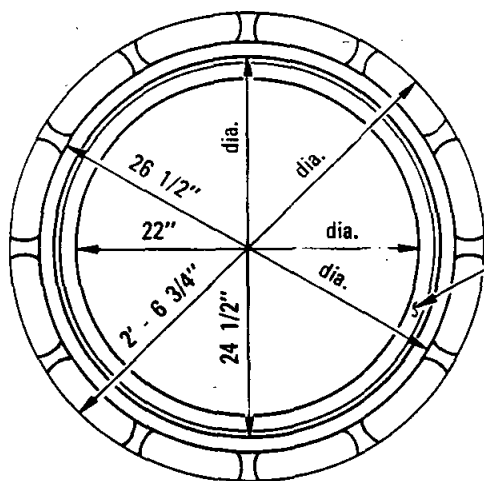
NOTES

1. Structural steel tubing used for post & sleeves shall be galvanized 12 gauge cold rolled steel, of the nominal dimensions shown hereon and meet the requirements of ASTM A446 Grade A.
2. Galvanizing shall be per ASTM A525. Posts & sleeves shall have 7/16" dia. holes spaced 1" o.c. $\pm 1/8"$ & shall have no more variation in straightness than 1/16" in 3'. Posts shall be square within $\pm 0.014"$, have twist no greater than 0.062" in 3' and have corner radii of 5/32" $\pm 1/64"$.
3. The signs shall be mounted on posts in accordance with Section 56, "Signs" of the State Standard Specifications. All fastening hardware is to be provided by the Contractor.
4. Maximum sign size 5.2 sq. ft.

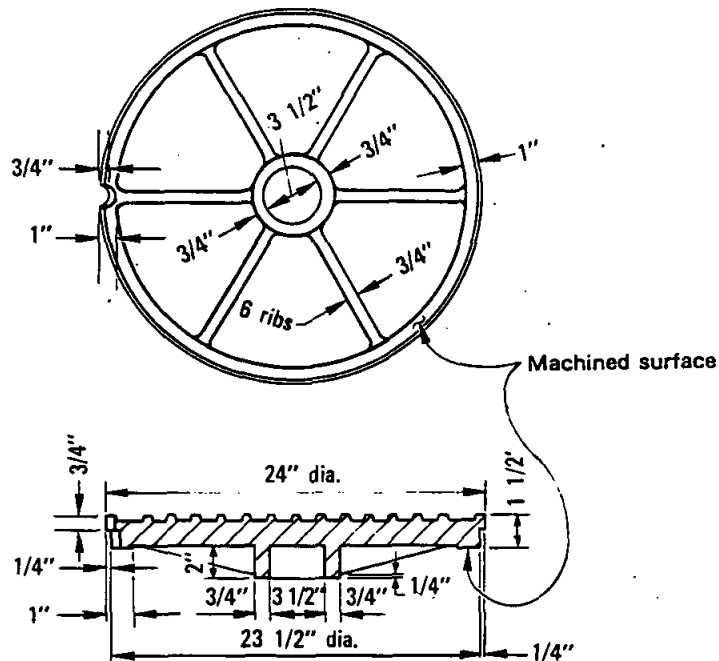
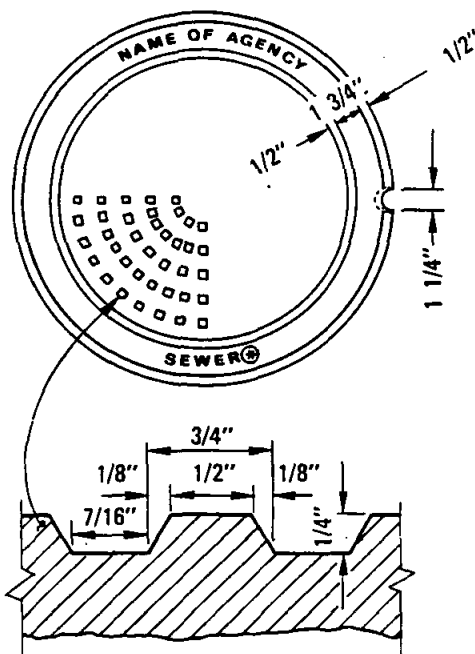


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
New Dwg	MA	RLM	2/95		
				BREAK-AWAY SIGN POST	Chairman R.C.E. 25902 Date DRAWING NUMBER M-45

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MANHOLE COVER FRAME



DETAIL

MANHOLE COVER

NOTES:

1. Frame and cover shall be cast iron. Cast iron shall conform to ASTM 48, Class 35B.
2. Weights: Frame 166 - 193 lbs.
Cover 147 - 171 lbs.
3. Machine all matching surfaces and seats of frame and cover to prevent rocking.
4. Imported frames and covers shall have the country of origin marked in compliance with federal regulations.

FOR	MARK
Sewer Projects	Sewer
Storm Drain Projects	Storm Drain
Water Projects	Water

Revision	By	Approved	Date
Note 3	SE	A.A.	7-88
Note #2	DM	D. Mohr	2-95

SAN DIEGO REGIONAL STANDARD DRAWING

24" MANHOLE FRAME AND COVER
HEAVY DUTY

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen G. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

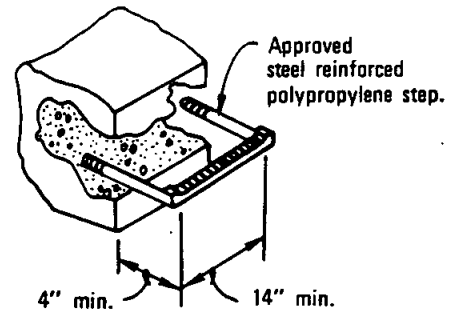
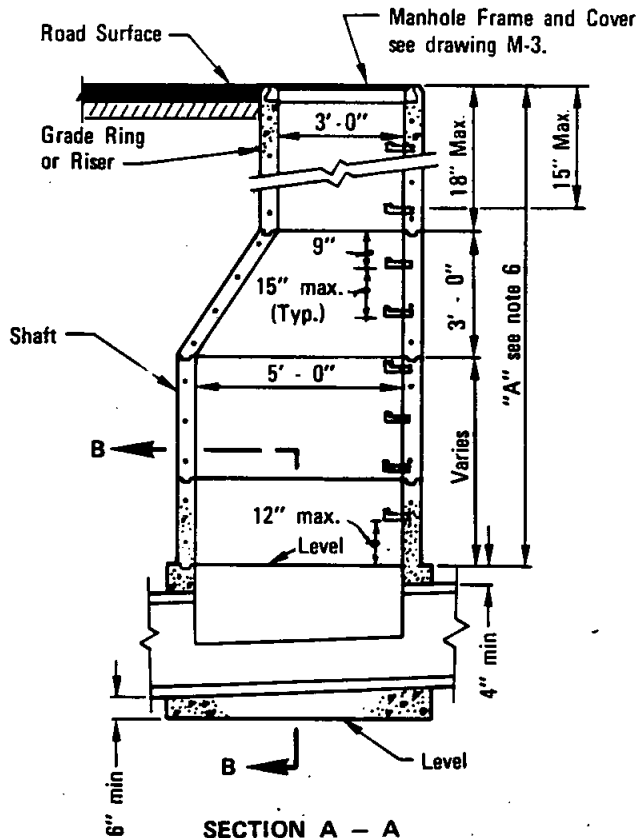
DRAWING
NUMBER M-1

SEWERAGE SYSTEMS

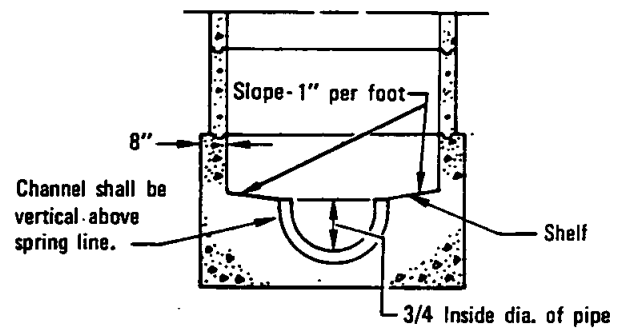
SEWERAGE SYSTEMS

S

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STEP DETAIL

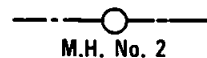


SECTION B - B

NOTES:

1. Manhole frame and all joints shall be set in Class "C" mortar.
2. All precast components shall be manufactured in accordance with ASTM C-478.
3. Vertical wall of cone shall be on the upstream side of the manhole.
4. Concrete base shall be 560-C-3250.
5. Approved water stop required for plastic pipe connectors.
6. Precast sections shall be used within dimension "A" as required, in order of preference listed:
 - A. Cone (notched for pipe if dimension "A" is less than 3').
 - B. 6" to 18" of 3' diameter grade rings/and/or risers.
 - C. 5' diameter shaft variable height.
 - D. Top step to be 15" Max. from top of frame and cover.
7. Flexible pipe joints shall be required within 12" of inside face of manhole except for plastic pipe.
8. All patching within manhole base shall be epoxy mortar.
9. Prior approval of precast base is required by the Agency.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

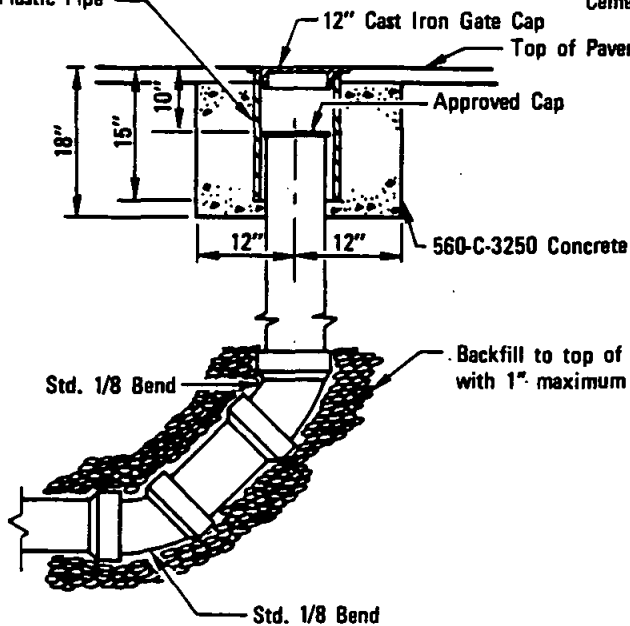
DRAWING
NUMBER **S-2**

SAN DIEGO REGIONAL STANDARD DRAWING

MANHOLE 5'x 3' DIAMETER

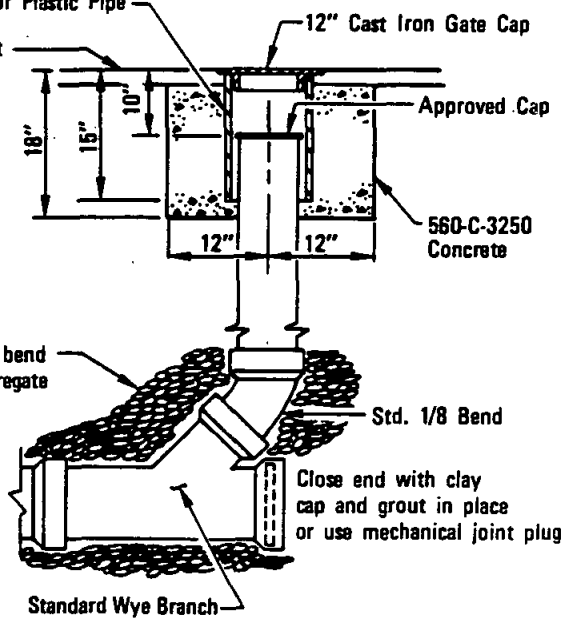
Revision	By	Approved	Date
Note 7	TRP	M.B.	10-82
Conc.	EC	M.B.	5-86
Notes	JP	J.A.	9-88
Conc base	JP	J.A.	5-92

Section of 12" Metallic, Asbestos
Cement or Plastic Pipe



TYPE A

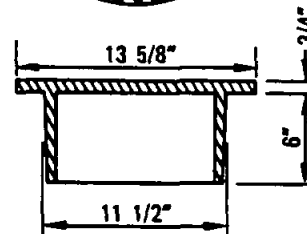
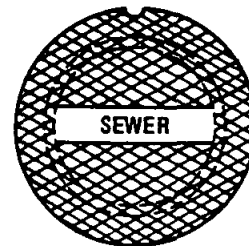
Section of 12" Metallic, Asbestos
Cement or Plastic Pipe



TYPE B

NOTES

1. Gate cap shall be labeled "Sewer".
2. Cleanouts may be used for either V.C.P. or plastic sewer mains.
3. Riser to be same diameter as sewer main.



GATE CAP
(Heavy Duty)

LEGEND ON PLANS

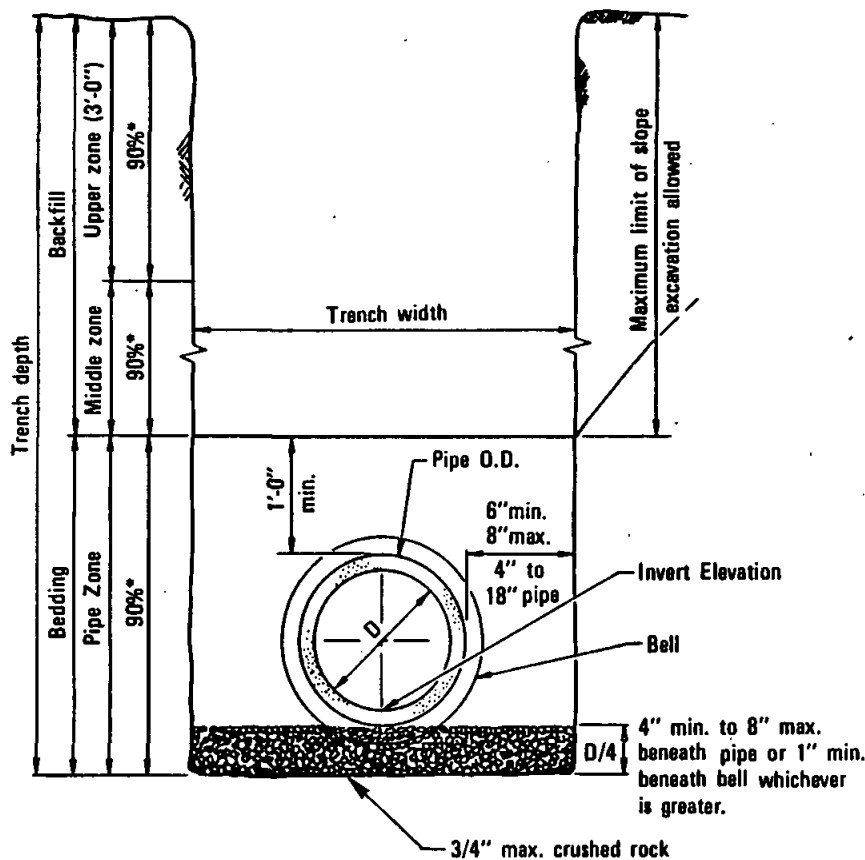


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Conc.	8	M.B.	5-86		
				SEWER MAIN CLEANOUT	<i>Allen O. Kershner</i> Dec. 1975 Coordinator R.C.E. 19807 Date
				DRAWING NUMBER	S-3

DRAWING
NUMBER S-4

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
M. J. Redford Dec. 1973
Coordinator R.C.E. 19807 Date

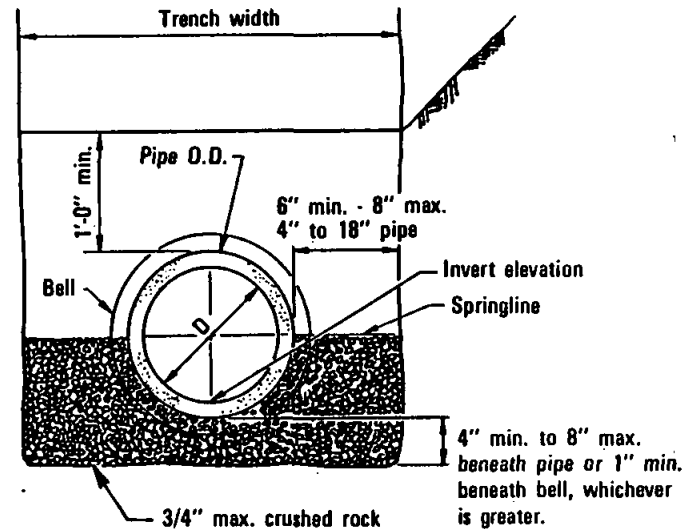
SAN DIEGO REGIONAL STANDARD DRAWING
PIPE BEDDING AND TRENCH BACKFILL
FOR SEWERS



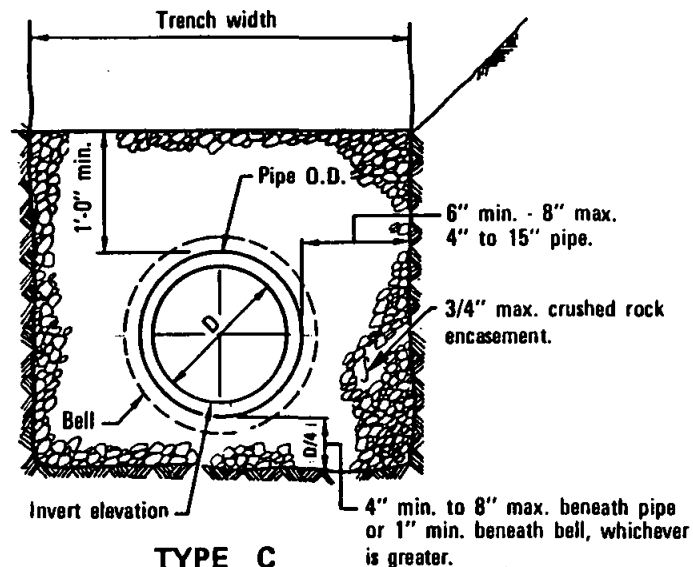
TYPE A
STANDARD INSTALLATION

NOTES

1. For trenching in improved streets, see Standard Drawings G-24 or G-25 for trench resurfacing.
2. (*) indicates minimum relative compaction.
3. Minimum depth of cover from the top of pipe to finish grade for all sanitary sewer installations shall be 3 feet. For cover less than 3 feet, see Standard Drawing S-7 for concrete encasement.
4. See Type A installation for details not shown for Types B and C.



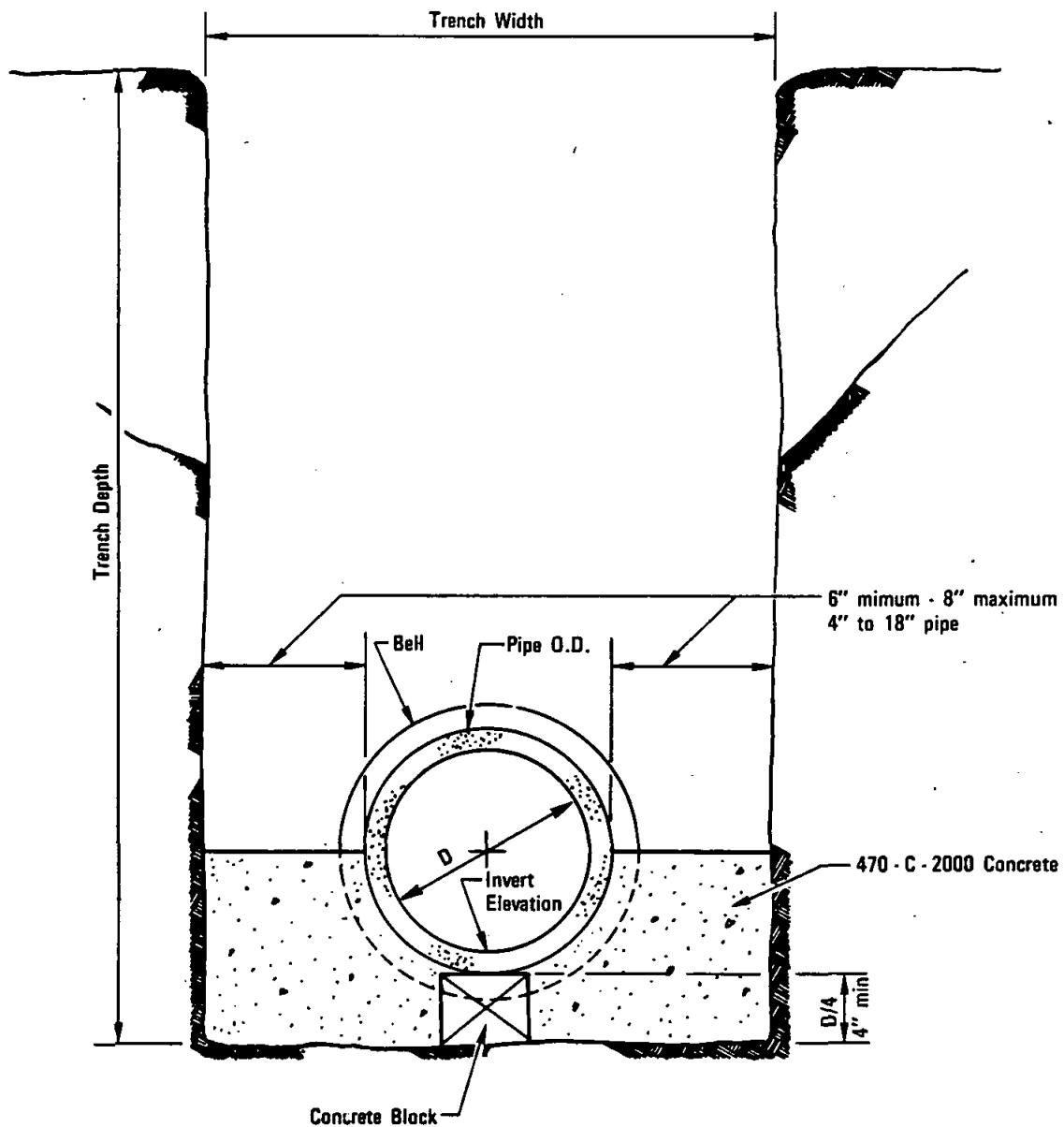
TYPE B
ROCK TO SPRINGLINE



TYPE C
ROCK ENVELOPE

Revision	By	Approved	Date
A, B, & C	BC	M.B.	5-86

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SECTION

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

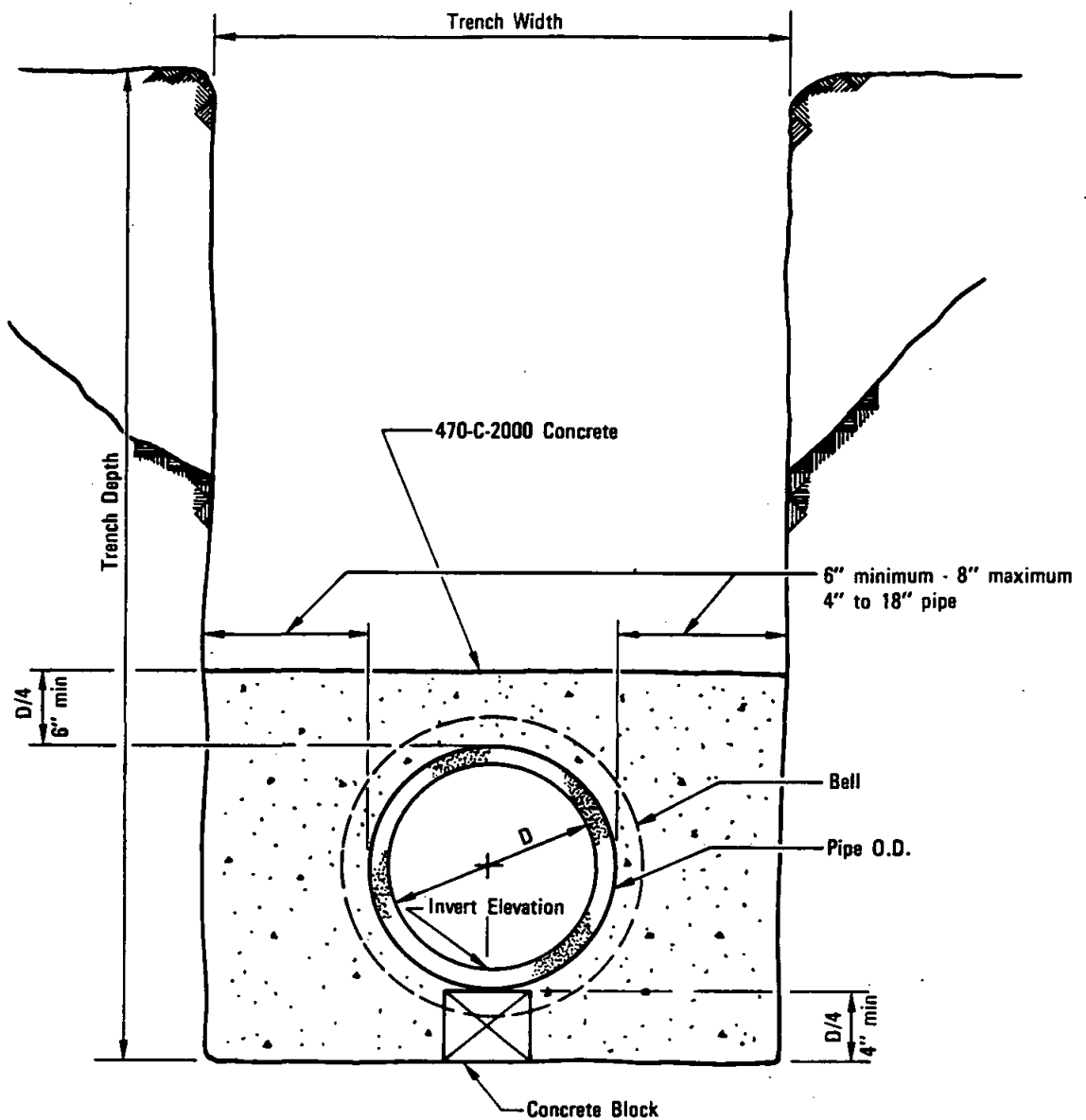
Allen A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER S-6

SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE CRADLE

Revision	By	Approved	Date



SECTION

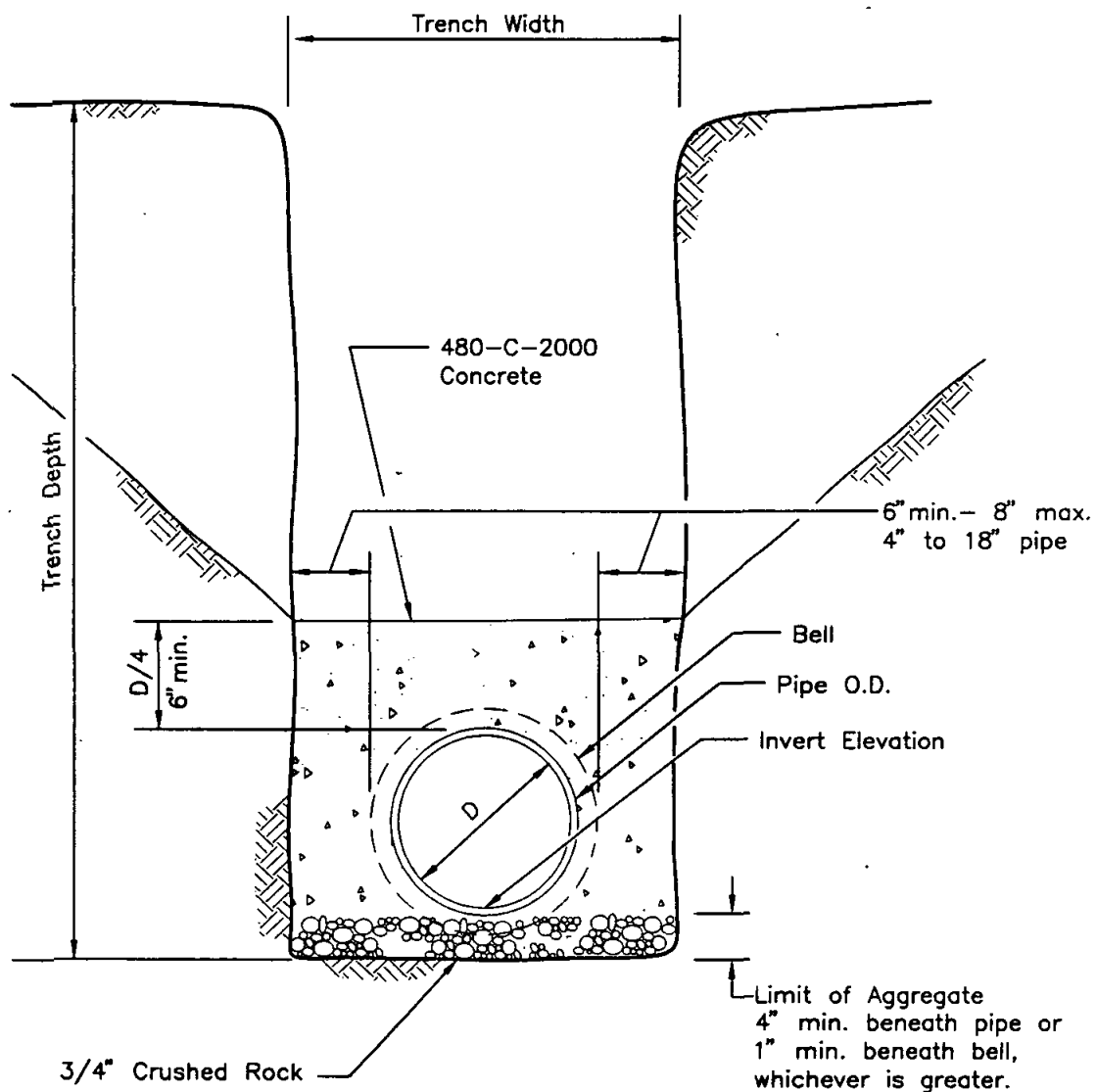
NOTE:

Encase pipe to the nearest flexible joint.

LEGEND ON PLANS

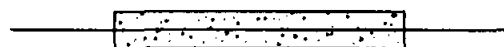
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Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Note	TRP	M.B.	10-82		
				CONCRETE ENCASEMENT	<u>Allen D. Keshner</u> <u>Dec. 1975</u> Coordinator R.C.E. 19807 Date
					DRAWING NUMBER S-7



SECTION

LEGEND ON PLANS



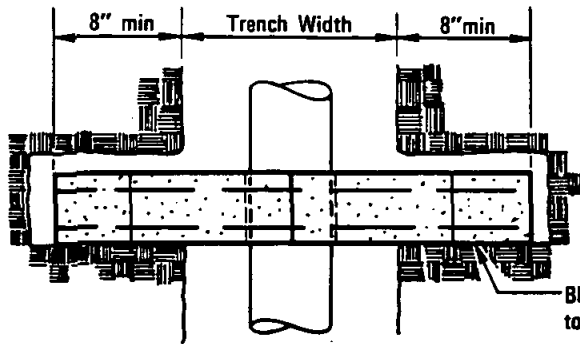
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
George P. Smith 2-95
Chairman R.C.E. 25902 Date

SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE BACKFILL

Revision	By	Approved	Date
Rock Sz	on	on	2-95

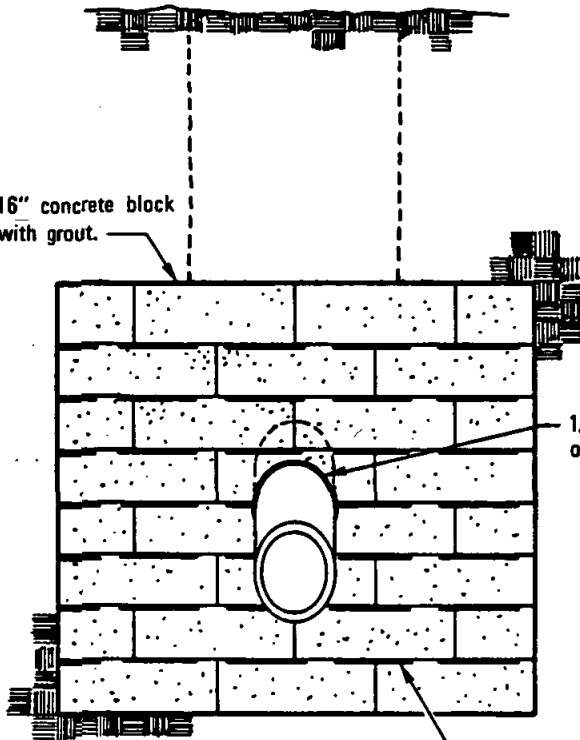
DRAWING
NUMBER S-8



Blocks to be laid as tightly as possible to downstream side of notch.

PLAN

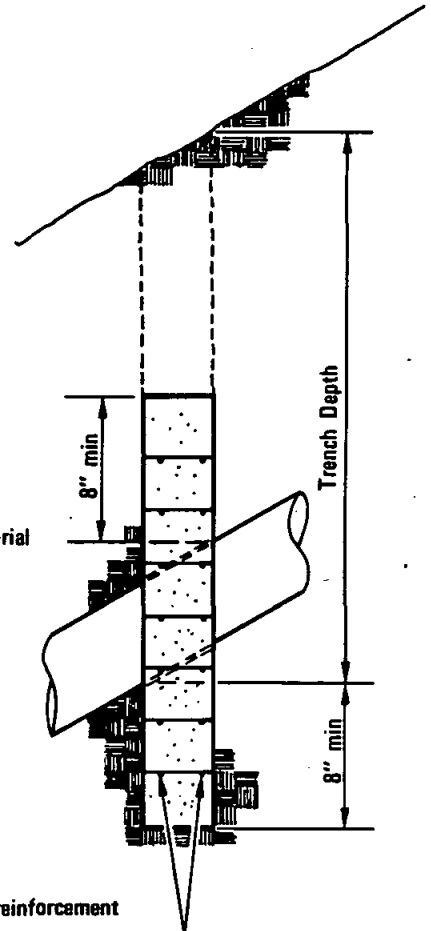
8"x 8"x 16" concrete block
Fill cores with grout.



1/2" expansion joint material
or jute around pipe.

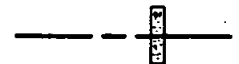
No. 9 wire ladder type reinforcement
in all horizontal joints.

FRONT ELEVATION



SIDE ELEVATION

LEGEND ON PLANS



Revision	By	Approved	Date
Expan. jt.	TRP	M.B.	10-82

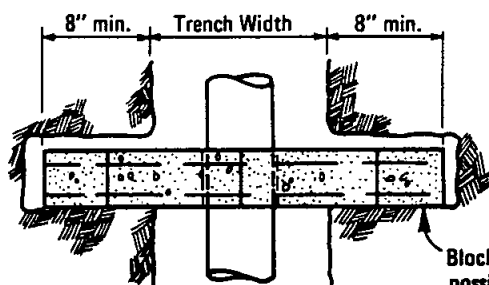
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE ANCHOR

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER S-9



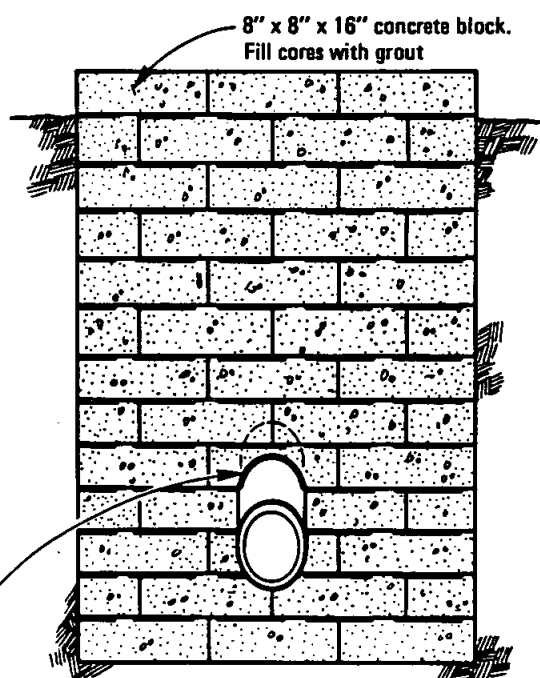
PLAN

Blocks to be laid as tightly as possible to downstream side of notch.

NOTES

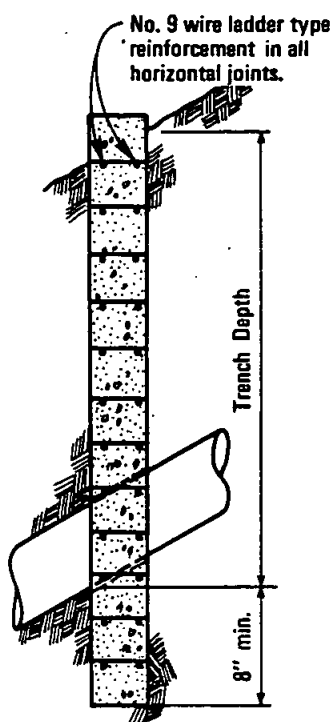
Type B:

1. No vertical joints permitted.
2. Horizontal joints must overlay by 2 corrugations.
3. Corrugations to run horizontally.
4. Front Elevation and Plan views similar to Type A.



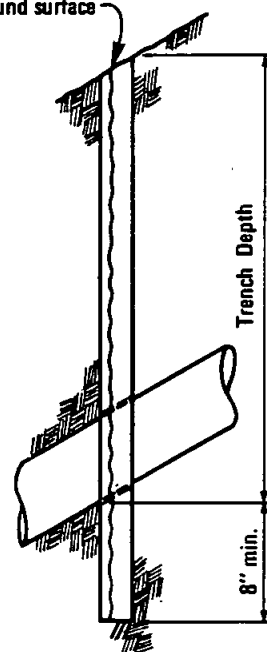
1/2" expansion joint material or jute around pipe.

FRONT ELEVATION



SIDE ELEVATION

Galvanized Corrugated Sheet Metal 18 Gage or heavier to be laid as tightly as possible to downstream side of notch. Make flush with ground surface.

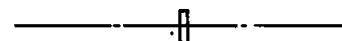


ELEVATION

TYPE A

TYPE B

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

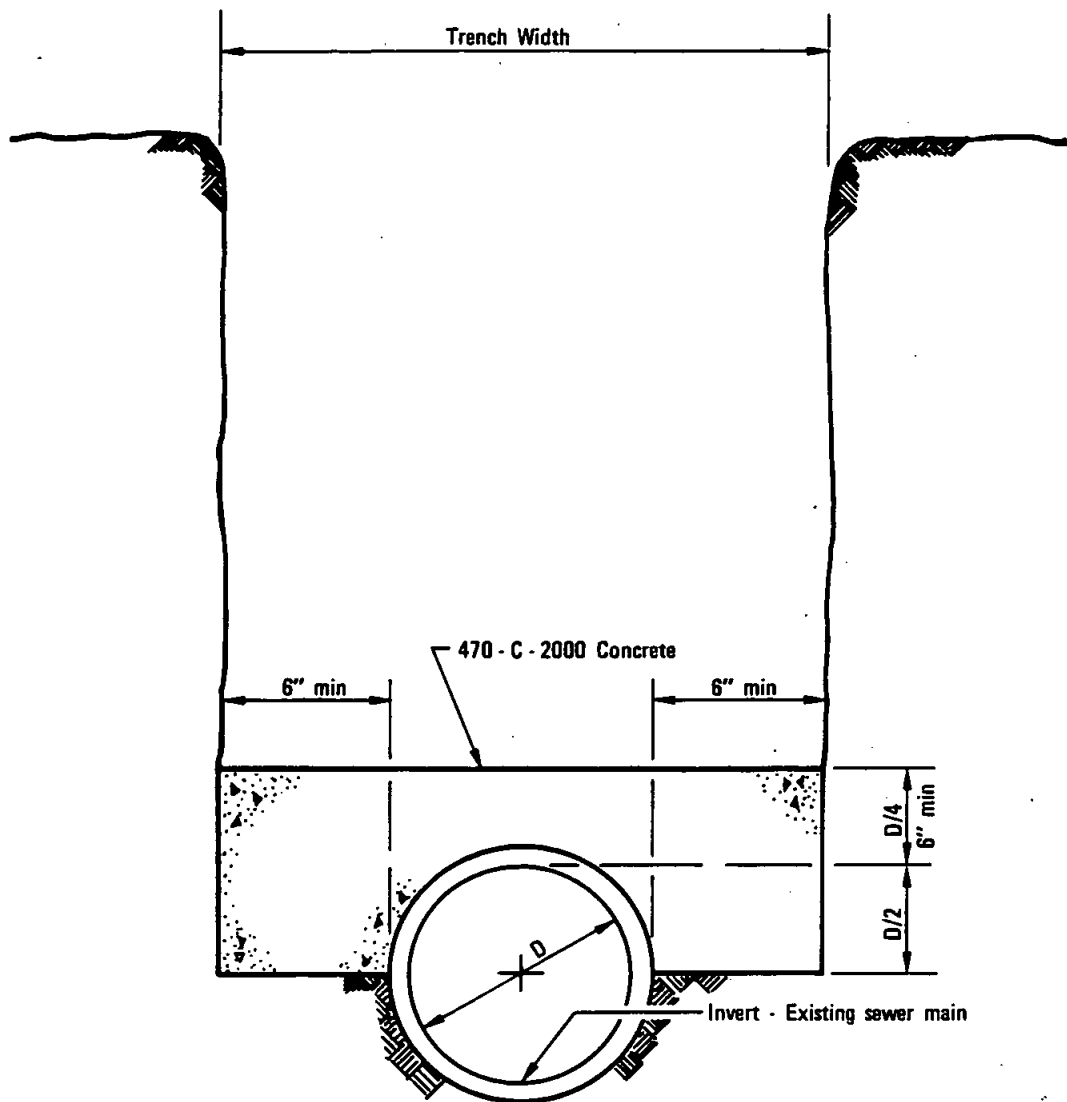
Allan A. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

CUTOFF WALL

Revision	By	Approved	Date
Type A	<i>D.S.</i>	<i>D.S.</i>	7-79
Chg. notes	<i>TR</i>	<i>M.B.</i>	10-82

DRAWING NUMBER S-10

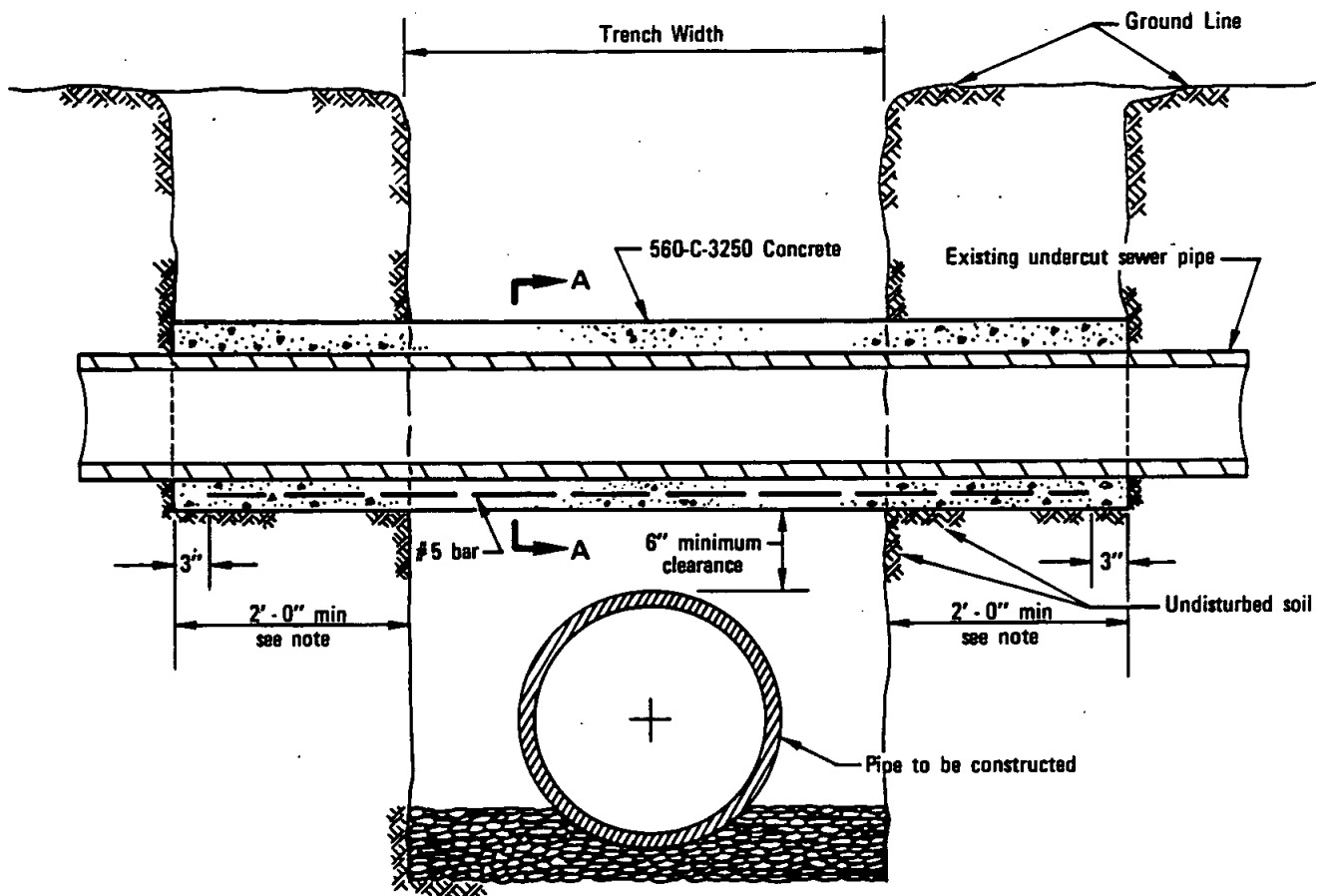


SECTION

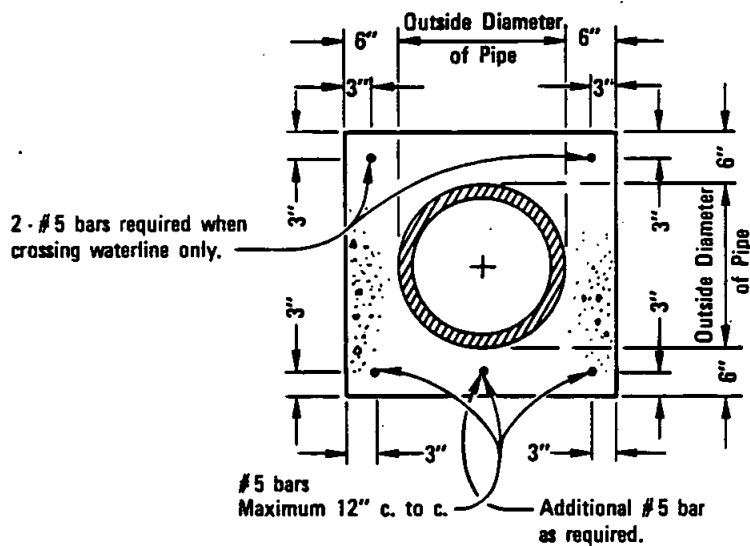
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				CONCRETE PROTECTION FOR EXISTING SEWER PIPE	<i>Allen P. Kuehn</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date
					DRAWING NUMBER S-11



TYPICAL SECTION

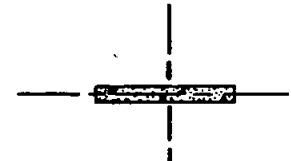


SECTION A-A

NOTE

For water line construction encasement shall extend to first joint beyond 2 feet at both sides of trench or to a distance of 4 feet, whichever is less.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

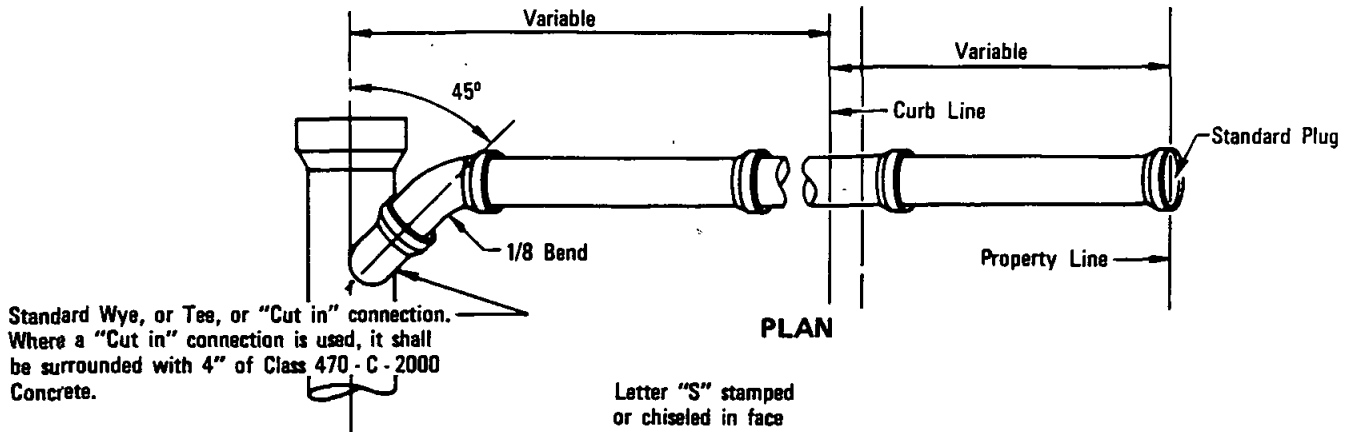
Allen O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **S-12**

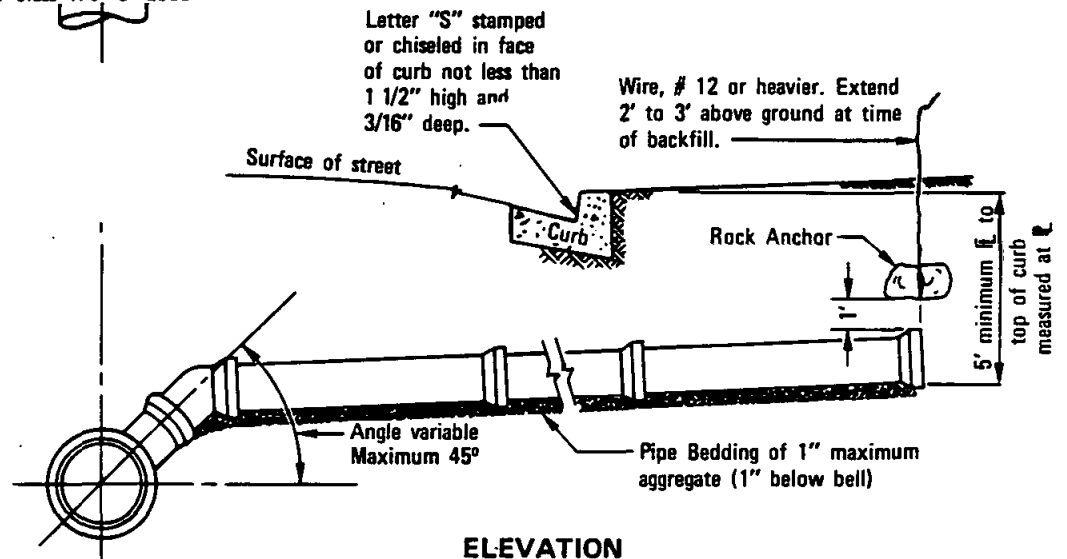
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE SUPPORT
FOR UNDERCUT SEWER PIPE**

Revision	By	Approved	Date
Conc.	SC	M.B.	5-86

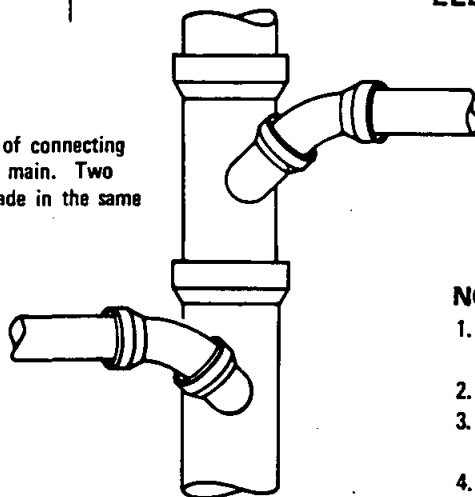


PLAN



ELEVATION

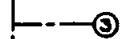
Detail showing the manner of connecting opposite laterals to a sewer main. Two connections shall not be made in the same length of pipe.



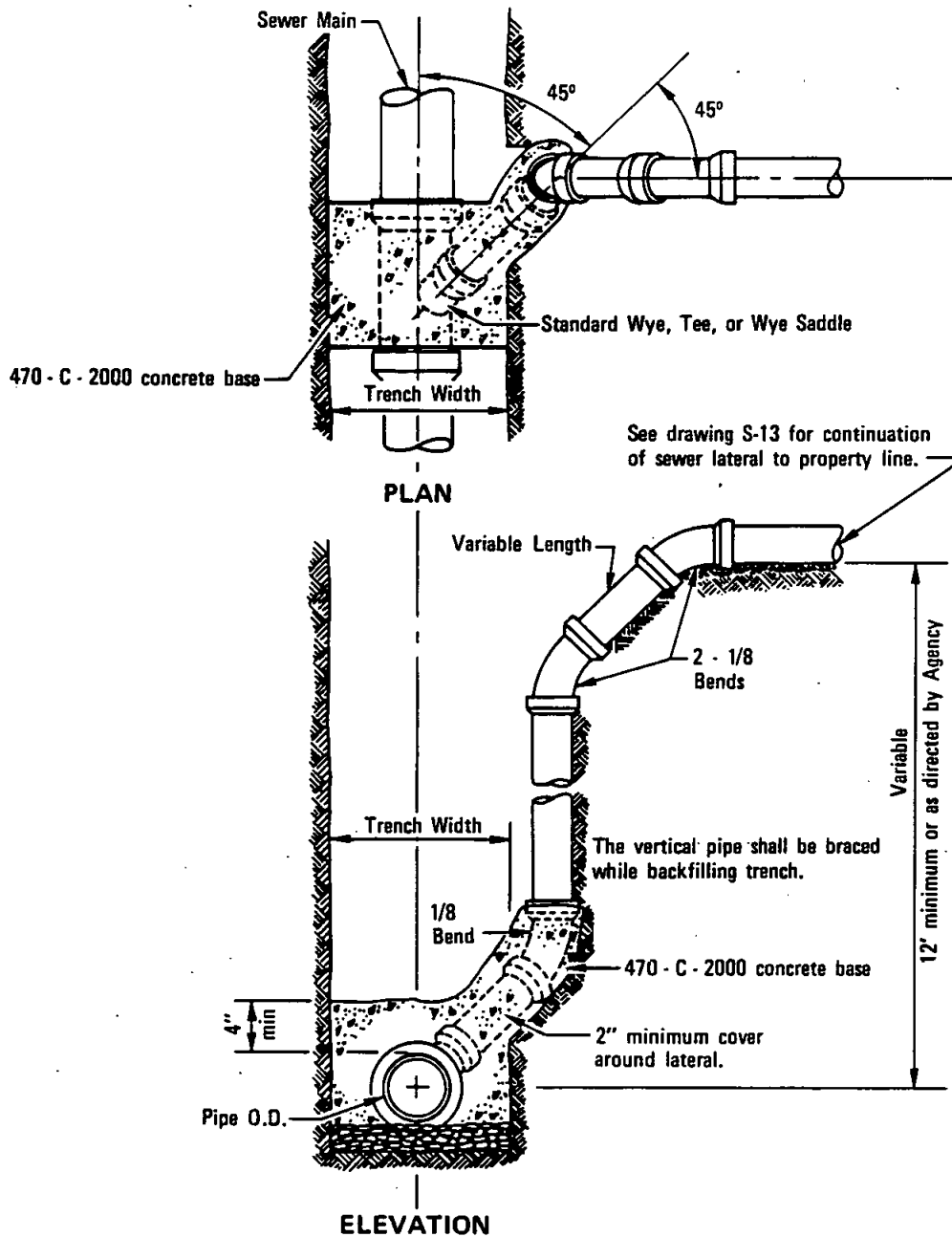
NOTES

1. In no case shall a lateral connect to the sewer main directly on top of the pipe.
2. Sewer laterals shall have a minimum slope of 2%.
3. All joints on sewer lateral pipe shall be compression type or approved solvent weld.
4. Lateral shall extend to property line unless otherwise shown on plans.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				HOUSE CONNECTION (SEWER LATERAL)		<i>Alfred G. Kuehn</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER	S-13



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

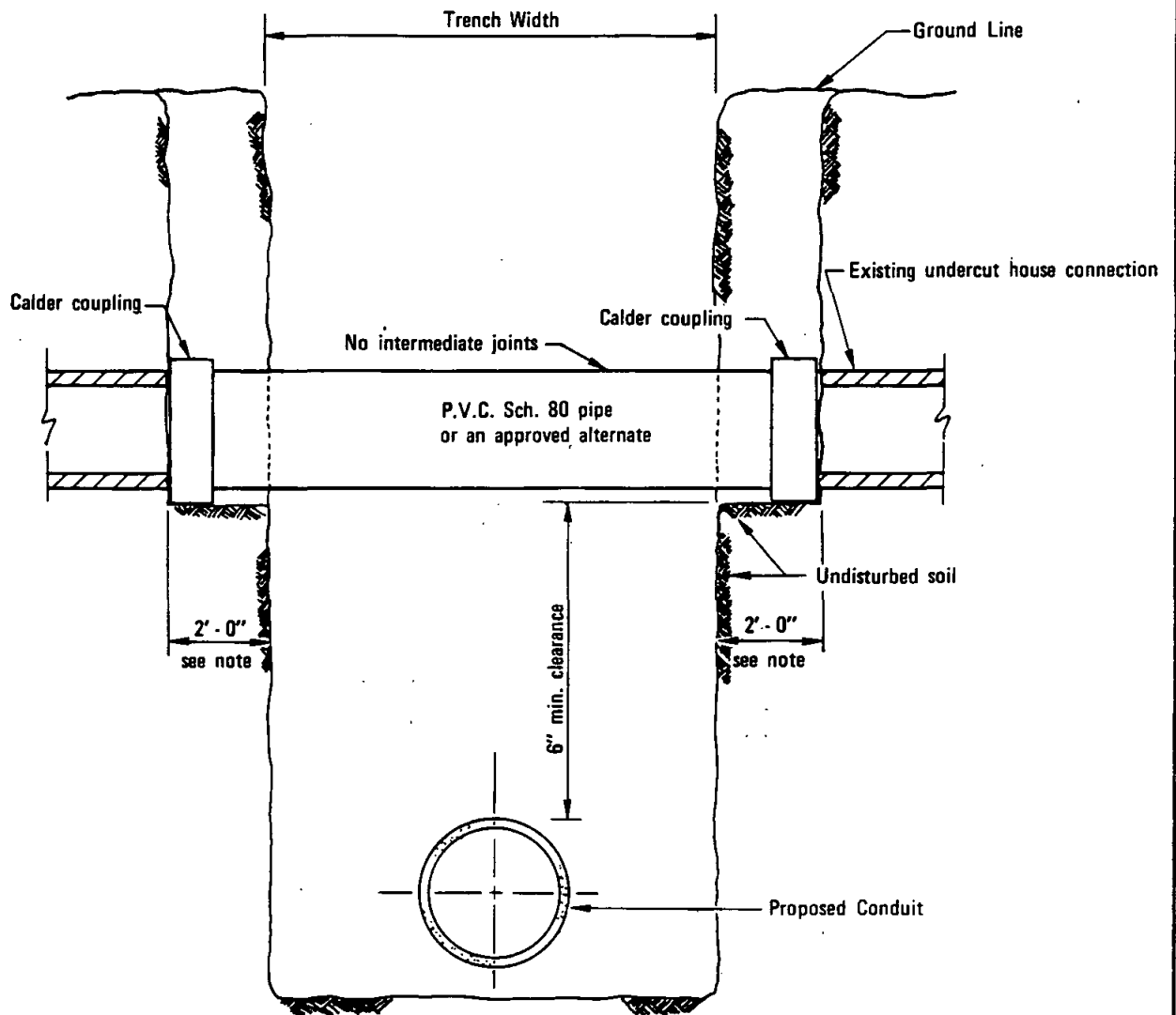
Allan A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

DEEP CUT HOUSE CONNECTION (SEWER LATERAL)

DRAWING
NUMBER S-14

Revision	By	Approved	Date



TYPICAL SECTION

NOTE

For water line construction repair pipe shall extend to first joint beyond 2 ft. at both sides of trench or to a distance of 4 ft., whichever is less.

Revision	By	Approved	Date

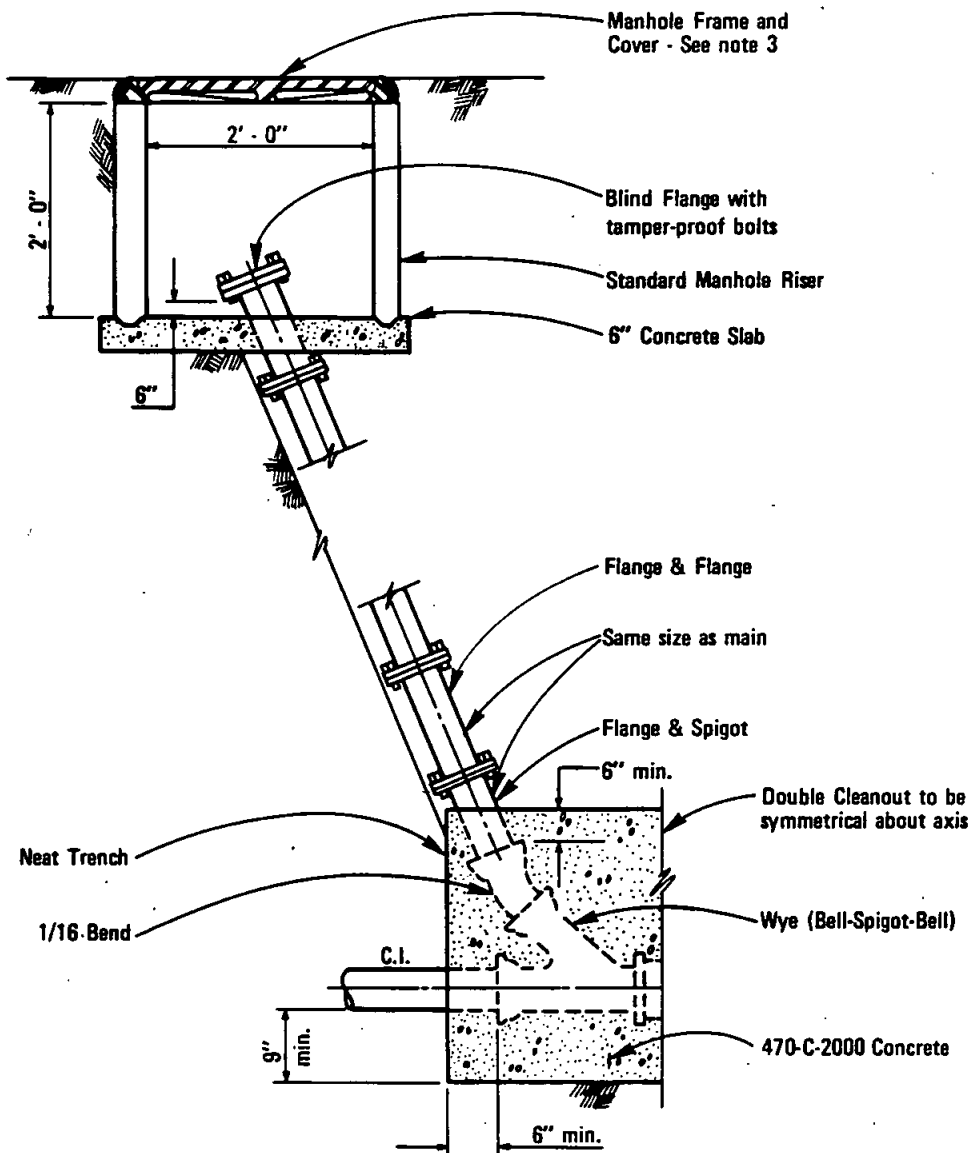
SAN DIEGO REGIONAL STANDARD DRAWING

HOUSE CONNECTION SEWER REPAIR

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

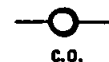
**DRAWING
NUMBER S-15**



NOTES

1. Similar poly vinyl chloride components may be used in accordance with A.S.T.M. Standard Specification D-3033.
2. Concrete slab to be 560-C-3250
3. Use heavy duty manhole frame and cover, Std. Dwg. M-1, in areas subject to vehicular traffic; use light duty manhole frame and cover, Std. Dwg. M-2, in all other locations.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

David J. Slevin July 1979
Coordinator R.C.E. 25291 Date

SAN DIEGO REGIONAL STANDARD DRAWING

CLEANOUT-SEWER FORCE MAIN

Revision	By	Approved	Date
Conc., slab	QC	M.B.	5-76

DRAWING
NUMBER S-16

SECTION B-B

SECTION A - A

LEGEND ON PLANS

M.H. No. 2

HALF SECTION SHALLOW MANHOLE

- Either Concentric or Eccentric Cone may be used.

SECTION C-C

STEP DETAIL

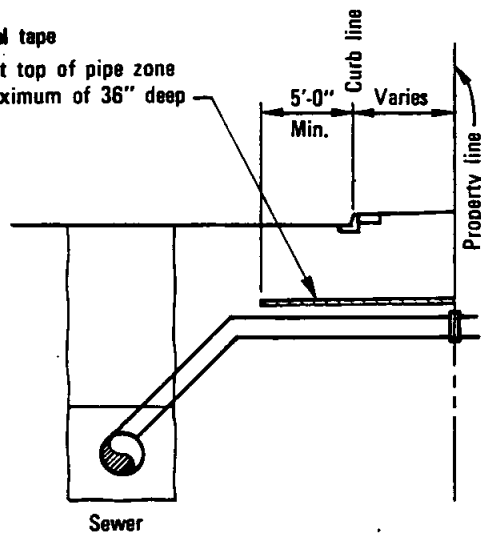
NOTES

1. Manhole frame and all joints shall be set in Class "C" mortar.
2. All precast components shall be manufactured in accordance with ASTM C-478 except step spacing.
3. Vertical wall of cone shall be on the upstream side of the manhole.
4. Concrete base shall be 560-C-3250.
5. Approved water stop required for plastic pipe connections.
6. Flexible pipe joints shall be required within 12" of inside face of manhole. (except for plastic pipe)
7. Precast base permitted as approved by Agency.
8. Precast sections shall be used within dimension "A" as required, in order of preference listed:
 - A. Cone (notched for pipe if dimension "A" is less than 3').
 - B. 3" to 18" of 3' diameter grade rings/and/or risers.
 - C. 4' diameter shaft variable height.
 - D. Top step to be 15" Max. from top of frame and cover.
9. All patching within manhole base shall be epoxy mortar.
10. Prior approval of precast base is required by the Agency.

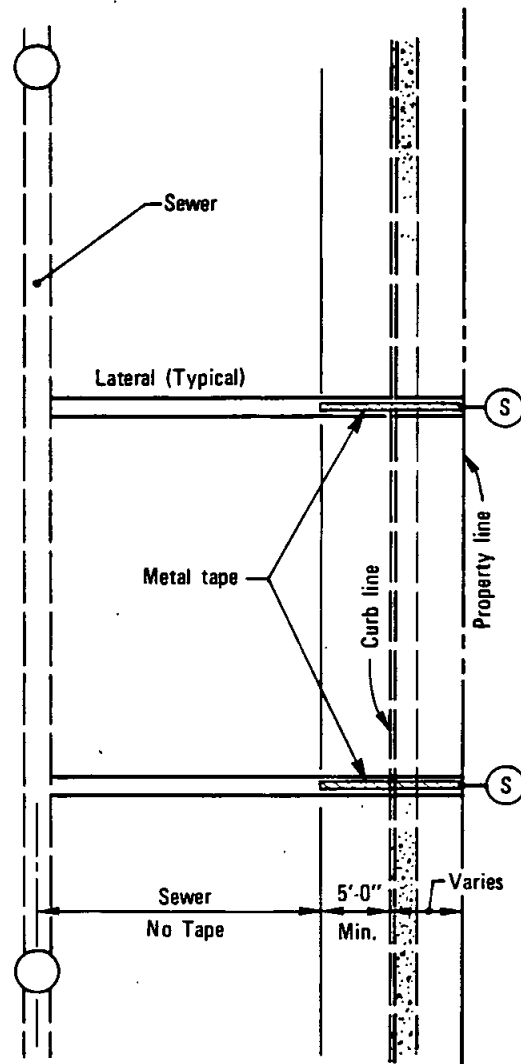
Revision		Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>David A. Johnson July 1979</i> Coordinator R.C.E. 25291 Date
Notes	TRP	Y.A.B.	10/82		
Conc., Step	E	M.B.	5-86	MANHOLE - 4' x 3' DIAMETER (FOR 15" MAX. DIA. PIPE)	DRAWING NUMBER S-17
NOTES	E	Q.H.	8-88		

6" Metal tape

Install at top of pipe zone
or a maximum of 36" deep



SECTION



PLAN

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				METALLIC TAPE LOCATOR FOR NON-METALLIC SEWER PIPE		<i>Rm. Babin</i> 4-25-86	
						Coordinator R.C.E. C21133 Date	
						DRAWING NUMBER S-19	

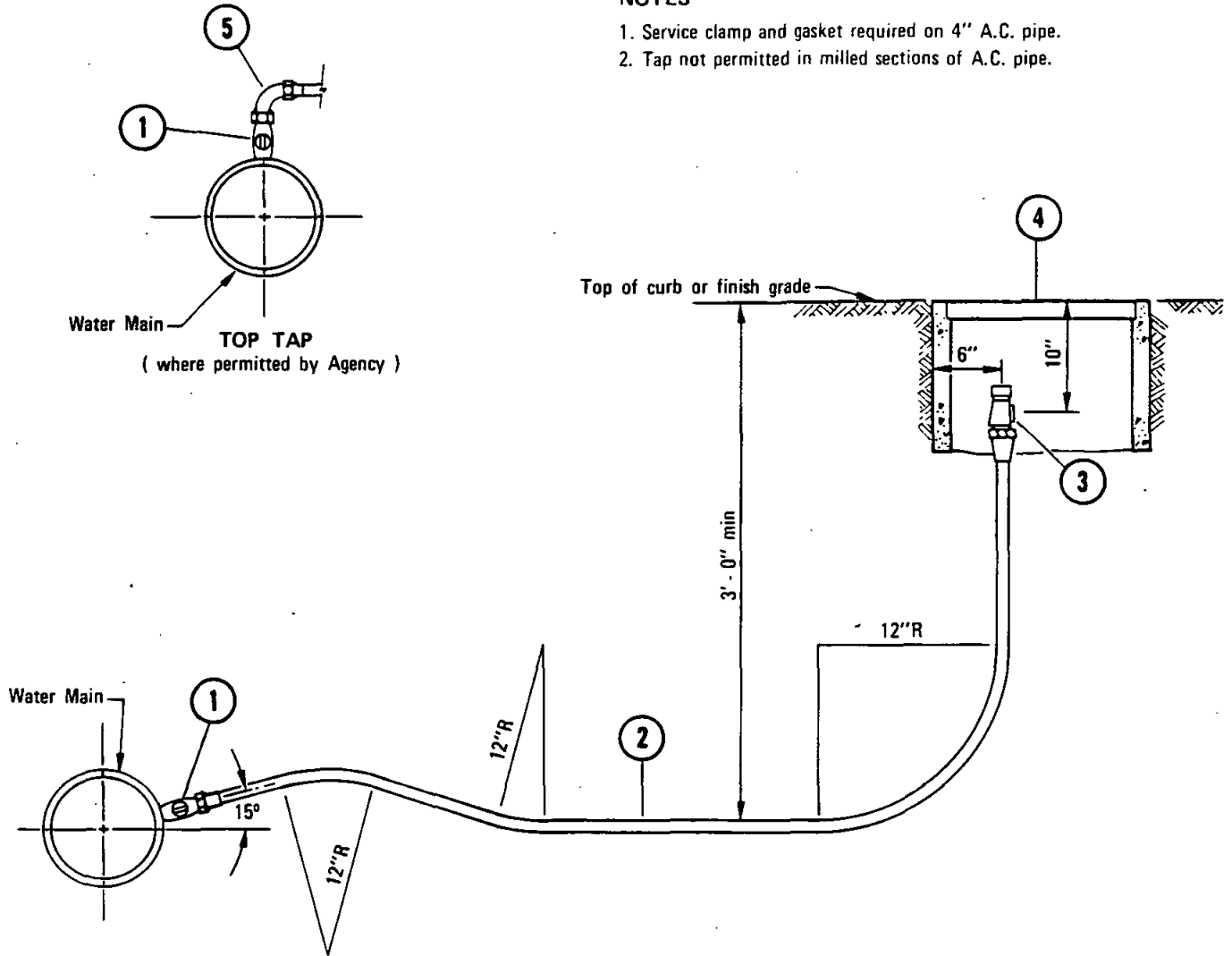
WATER SYSTEMS

WATER SYSTEMS

W

NOTES

1. Service clamp and gasket required on 4" A.C. pipe.
2. Tap not permitted in milled sections of A.C. pipe.

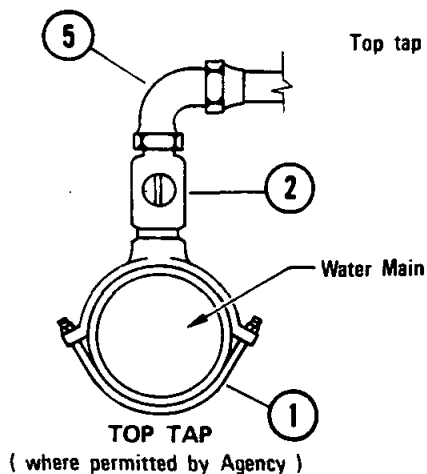


- 1 Bronze Corporation Stop (installed with key on side and open tap) and Adaptor as required by Agency.
Note: On steel mains use clamp or weld on coupling as required by Agency.
Install insulating bushing as required by Agency.
- 2 Copper Tubing or Plastic Pipe (no intermediate joints permitted without approval of the Agency).
- 3 Bronze Angle Service Stop with Locking Device and Meter Coupling attached.
- 4 Meter Box (see Standard Drawing W-15 for location).
- 5 90° Ell

LEGEND ON PLANS

1" (W)

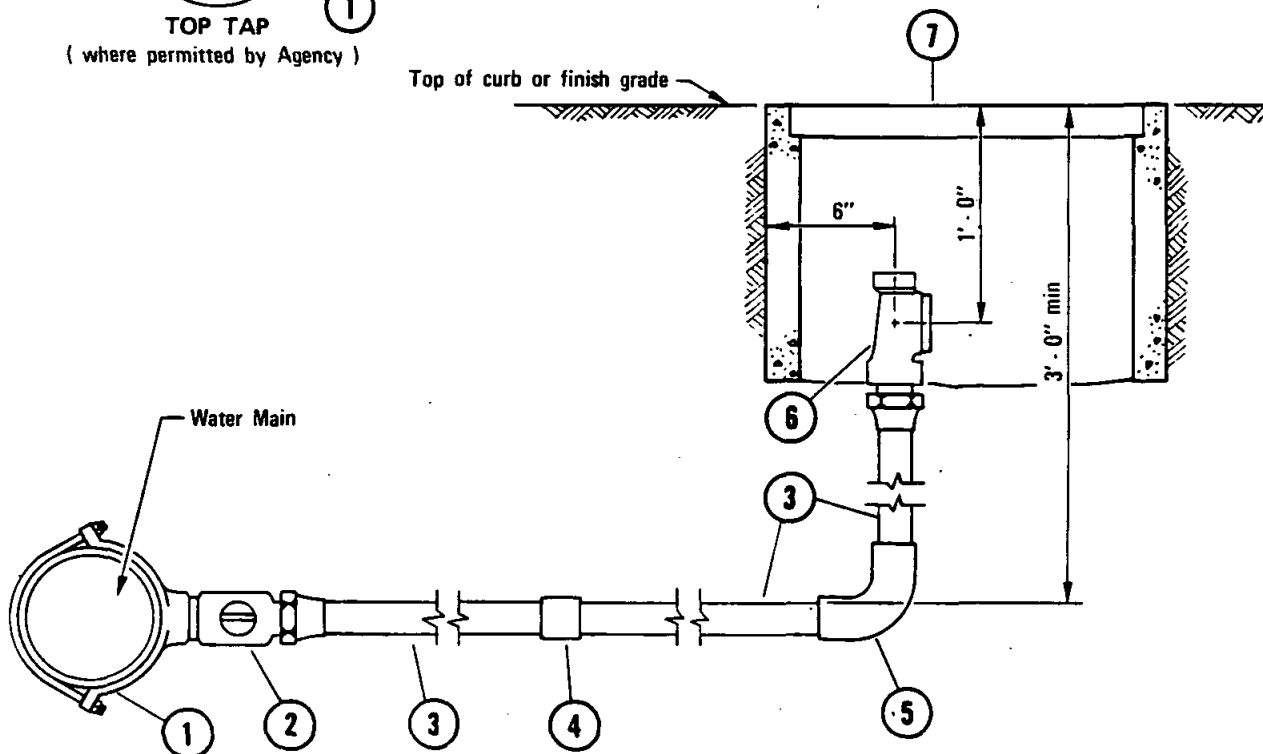
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Notes	30	D.S.	7-79		
				1" WATER SERVICE	<div><div><i>Allan O. Kershner</i>Dec. 1975</div><div>CoordinatorR.C.E. 19807Date</div></div>
				DRAWING NUMBERW-1	



Top tap where permitted by Agency

NOTE

Silver Soldered Joints may be used where approved by the Agency.



- 1 Bronze Service Clamp (double strap). On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- 2 Bronze Corporation Stop (installed with key on side and open tap).
- 3 Copper Tubing or Plastic Pipe except where otherwise specified by the Agency.
- 4 Coupling as required by Agency when service is 20' or longer, except on Polyethylene Pipe.
- 5 90° Ell
- 6 Bronze Angle Service Stop with Locking Device and adaptable to 1 1/2" and 2" Meter Flange.
- 7 Meter Box (see Standard Drawing W-15 for location).

LEGEND ON PLANS

2" (W)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

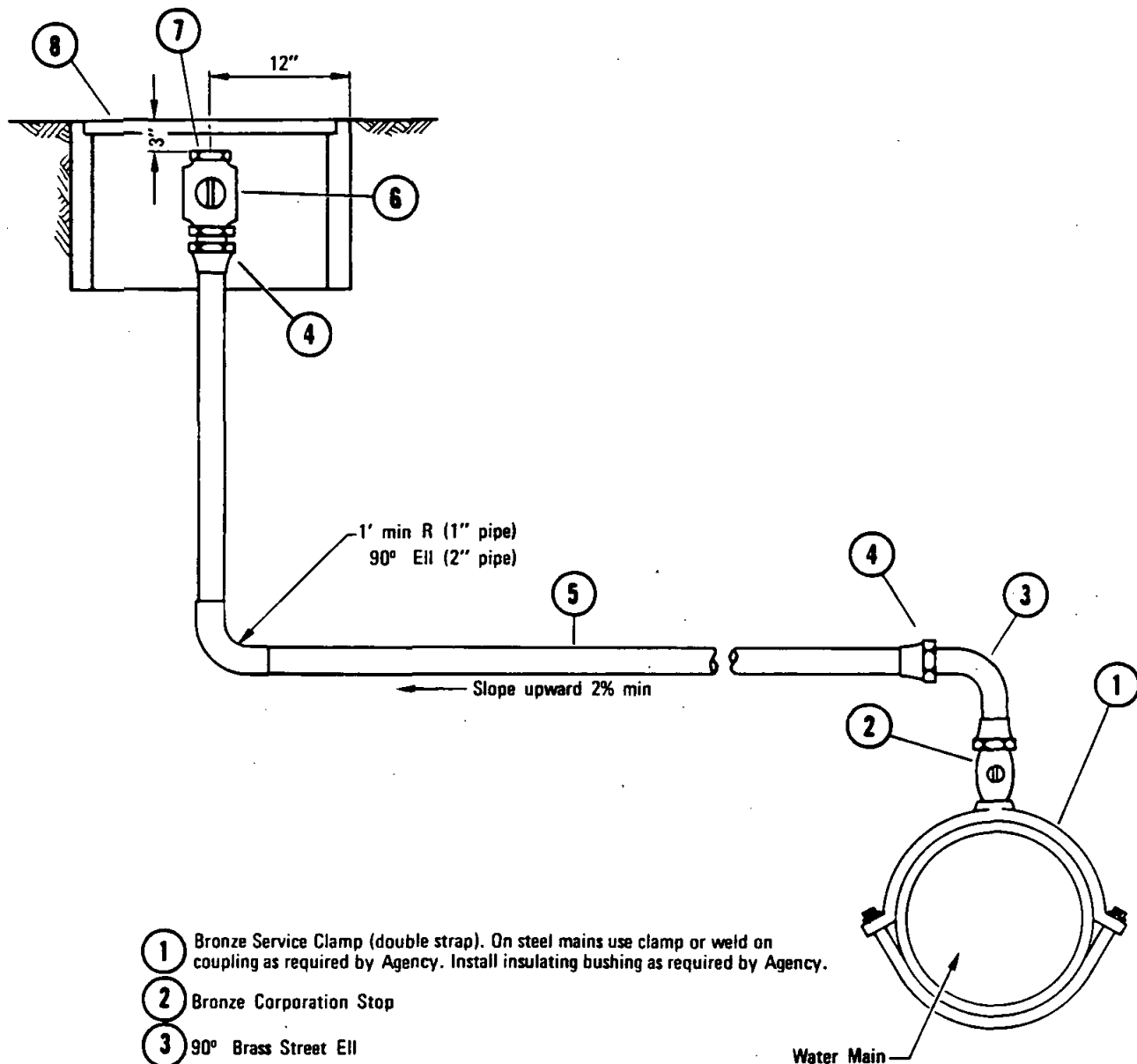
Allen A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

1 1/2" AND 2" WATER SERVICES

DRAWING
NUMBER **W-2**

Revision	By	Approved	Date
Notes	<i>SC</i>	<i>D.S.</i>	7-79



- ① Bronze Service Clamp (double strap). On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- ② Bronze Corporation Stop
- ③ 90° Brass Street Ell
- ④ Pipe to Tubing Adaptor
- ⑤ Copper Tubing
- ⑥ Ball Valve
- ⑦ Brass Plug
- ⑧ Meter Box (see Standard Drawing W-15 for location).

LEGEND ON PLANS



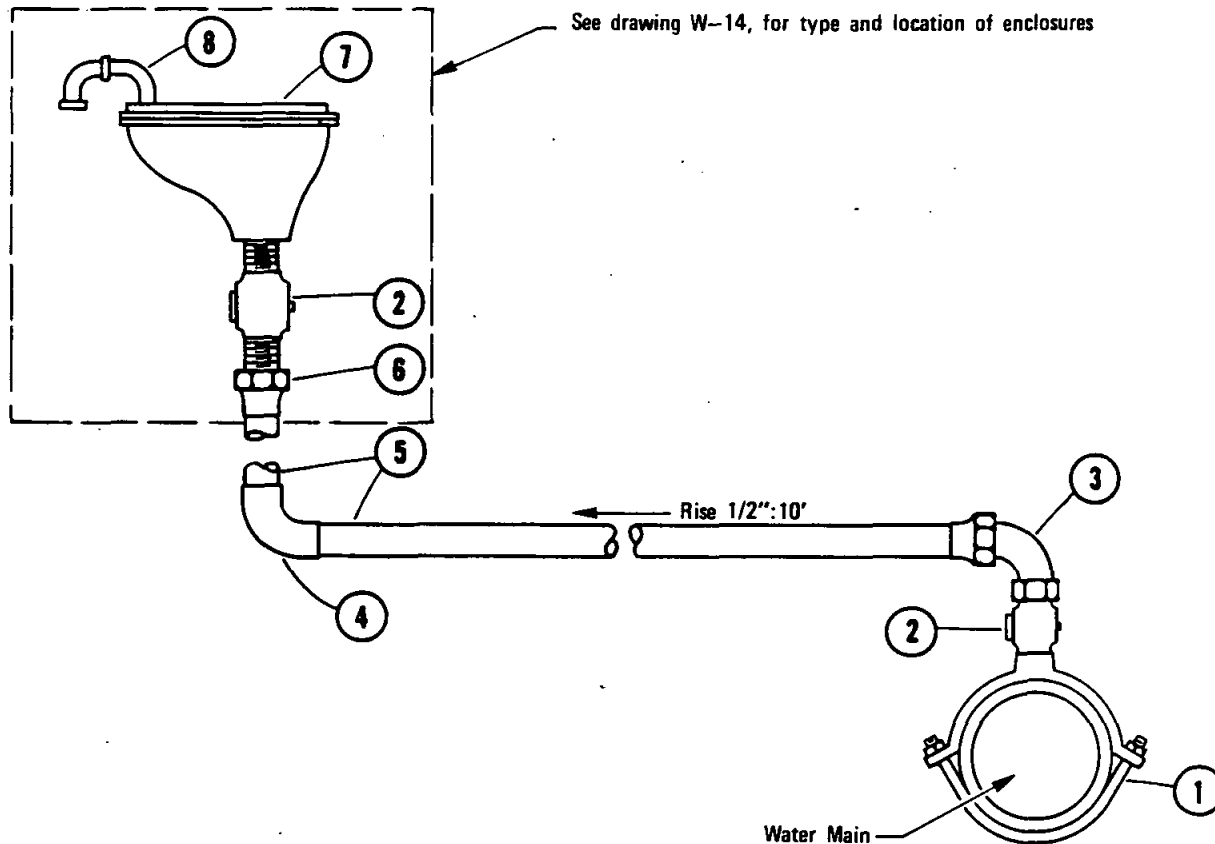
Revision	By	Approved	Date
Notes	3	D.S.	7-77

SAN DIEGO REGIONAL STANDARD DRAWING

1" AND 2" MANUAL AIR RELEASES

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allen G. Kershner Dec. 1975
Coordinator R.C.E. 19887 Date

DRAWING
NUMBER W-3



- ① Double Strap Bronze Service Clamp. On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- ② Corporation Stop
- ③ Pipe x Tubing 90° Ell
- ④ 90° Sweat Ell
- ⑤ Copper Tubing
- ⑥ Female Adaptor
- ⑦ Air and Vacuum Valve
- ⑧ 2-90° Ells (not required in above metal ground enclosures).

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

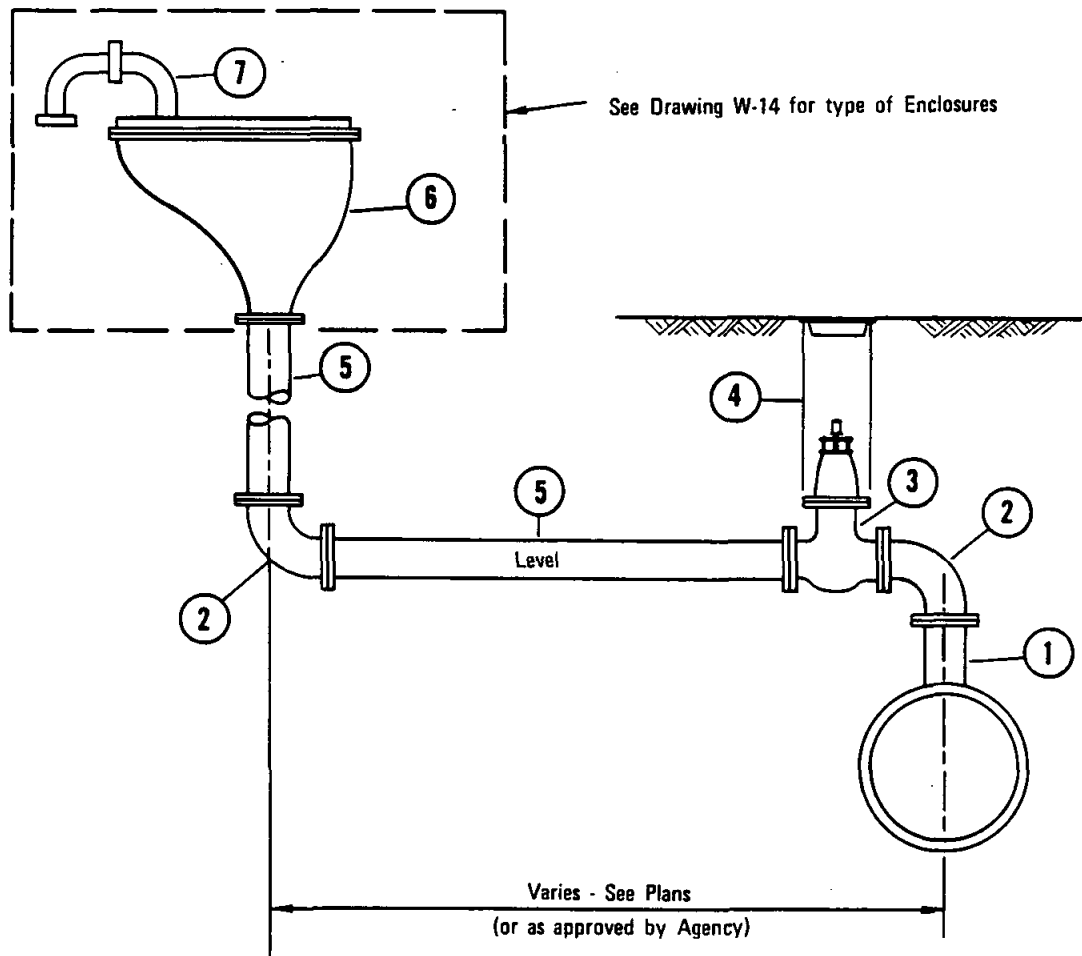
DRAWING
NUMBER

W-4

SAN DIEGO REGIONAL STANDARD DRAWING

1" AND 2" AIR AND VACUUM VALVES

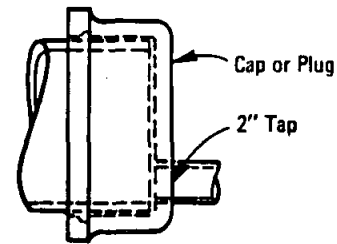
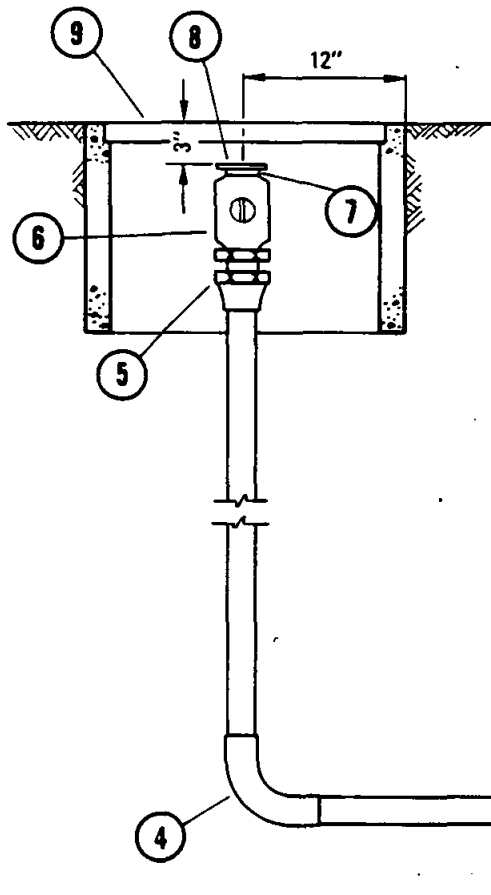
Revision	By	Approved	Date
Notes	<i>JS</i>	<i>O.S.</i>	<i>7-79</i>



- ① Flanged Outlet, Cement Lined and Coated Steel
- ② Flanged, 90° Ell, Cement Lined and Coated Steel
- ③ Valve
- ④ Valve Well and Cap (see Standard Drawing W-12)
- ⑤ Steel Pipe, Cement Lined and Coated
- ⑥ Air and Vacuum Valve
- ⑦ 2 90° Ells (not required with above ground metal enclosures)

LEGEND ON PLANS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
				4" AND 6" AIR AND VACUUM VALVES	
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				<i>Allan A. Kershner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	
				DRAWING NUMBER W-5	



END OF MAIN DETAIL

- 1 Bronze Service Clamp (double strap). On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- 2 Bronze Corporation Stop (installed with key on side and open tap) and adaptor as required by Agency.
- 3 Copper Tubing
- 4 90° Ell
- 5 Pipe to Tubing Adaptor
- 6 Ball Valve
- 7 Brass 2" Iron Pipe Thread x 2 1/2" Hose Pipe Thread Adaptor.
- 8 2 1/2" Hose Cap with chain, Brass.
- 9 Meter Box (see Standard Drawing W-15 for location).

LEGEND ON PLANS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

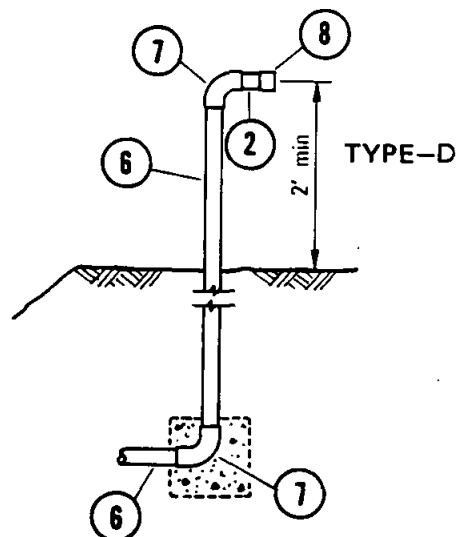
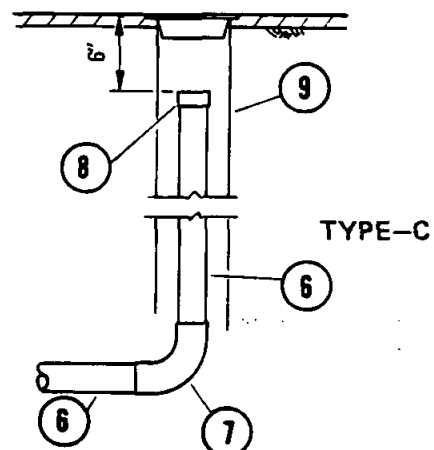
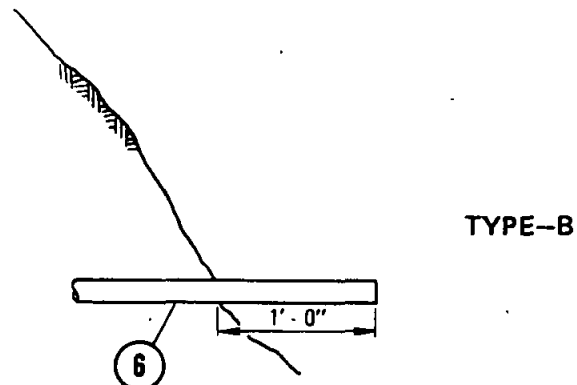
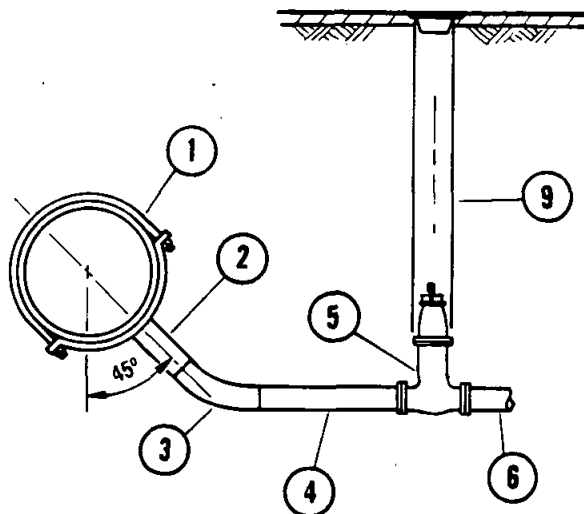
Allen O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **W-6**

SAN DIEGO REGIONAL STANDARD DRAWING

2" BLOW-OFF ASSEMBLY - TYPE A

Revision	By	Approved	Date
Detail	<i>2</i>	<i>O.S.</i>	<i>7-79</i>



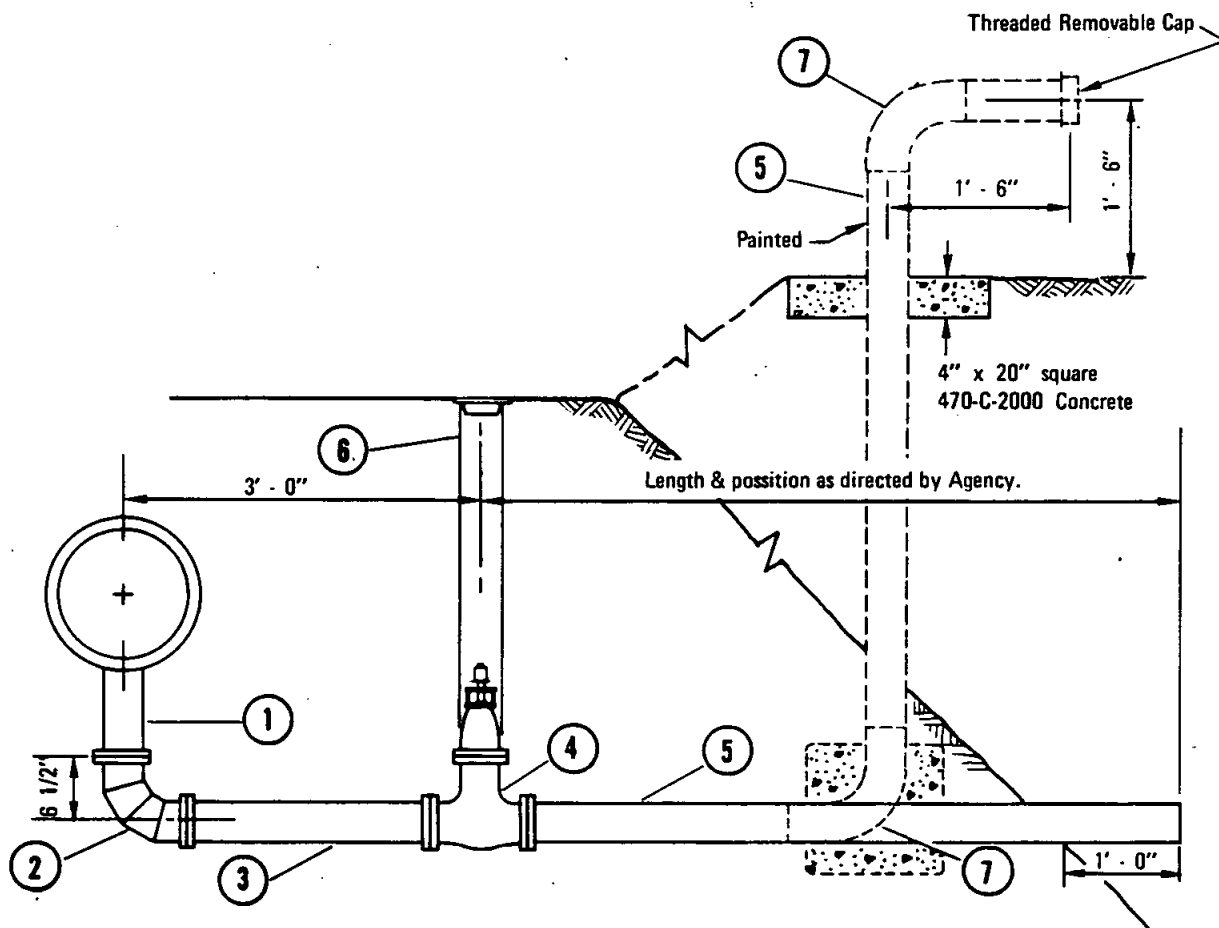
- 1 Bronze Service Clamp (double strap) or Pretapped Coupling. On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- 2 2" Nipple (2"x 3")
- 3 45° Ell
- 4 2" Nipple (2"x 6")
- 5 2" Valve
- 6 2" Pipe
- 7 90° Ell
- 8 2" Threaded Cap
- 9 Valve Well Installation, See Standard Drawing W-12

NOTES

1. Type of installation and materials to be specified by Agency.
2. See Standard Drawing W-6 for end of main detail.

LEGEND ON PLANS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Notes	2	D.S.	7-79			
				2" BLOW-OFF ASSEMBLIES TYPES B, C AND D		<i>Allen P. Kershner</i> Dec. 1975 Coordinator R.C.E. 19807 Date
				DRAWING NUMBER		W-7



- ① Flanged Tee or Welded Saddle.
- ② Short Radius 90° Flanged Bend, Cement Lined and Coated.
- ③ Steel Pipe, Cement Lined and Coated.
- ④ Flanged Valve.
- ⑤ Steel Pipe (or P. V. C. Schedule 80 Pipe Where Permitted by Agency).
- ⑥ Valve Well (See Standard Drawing W-12).
- ⑦ 90° Bend (Same Material as Item 5).

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kneib Dec. 1975
Coordinator R.C.E. 19807 Date

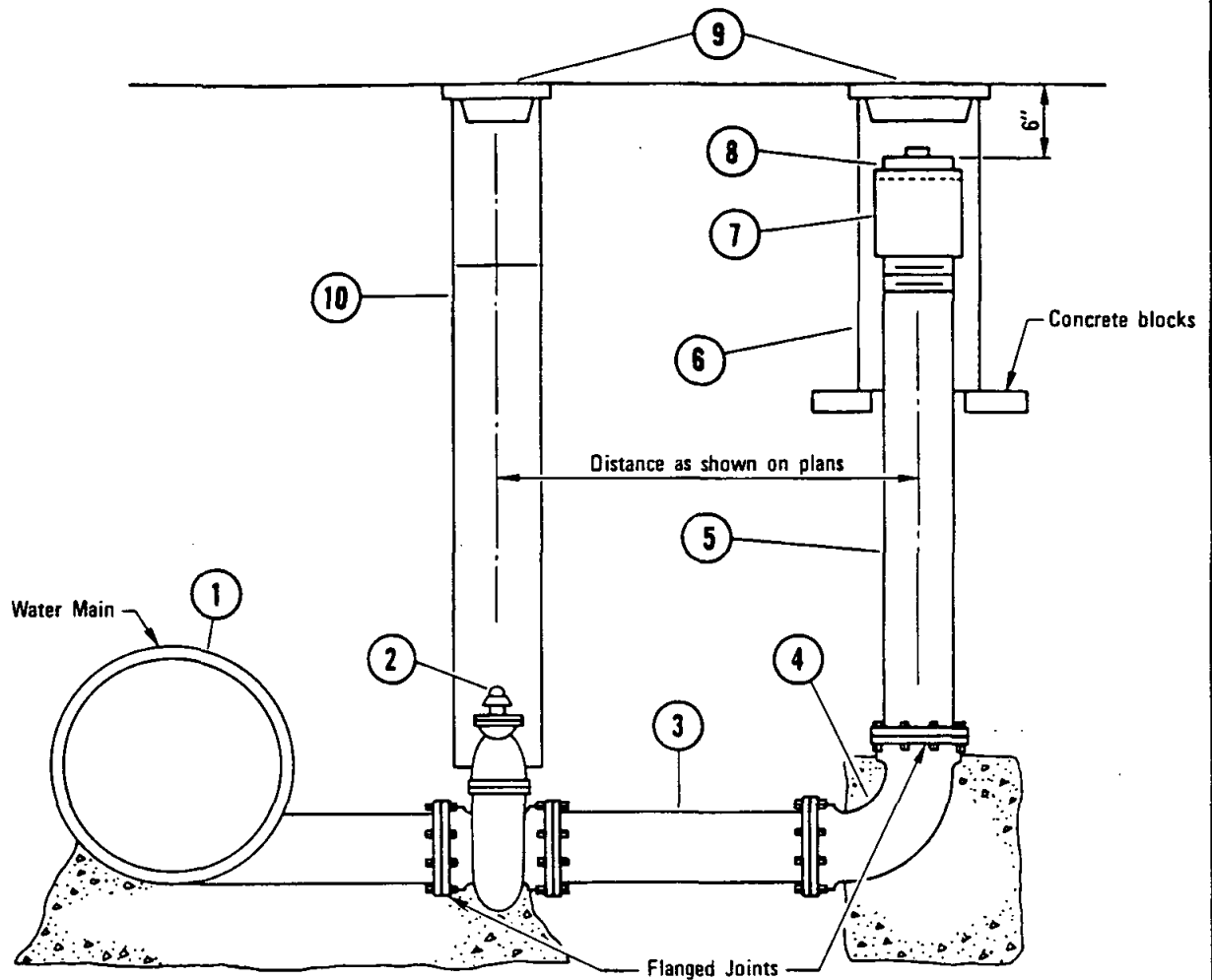
DRAWING
NUMBER

W-8

SAN DIEGO REGIONAL STANDARD DRAWING

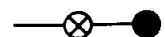
4" AND 6" BLOW-OFF ASSEMBLIES
TYPE A

Revision	By	Approved	Date



- ① Main Size x Flanged Outlet, cement lined and coated.
- ② Flanged Gate Valve (F x RT for A.C. Pipe).
- ③ Cast Iron Pipe or A.C. Pipe (6 1/2' min for A.C. Pipe).
- ④ F x F 90° Bend (F x RT for A.C. Pipe).
- ⑤ Galvanized Iron Pipe, threaded and flanged.
- ⑥ 10" Class 200 A.C. Pipe Gate Well.
- ⑦ Galvanized Iron Coupling, threaded.
- ⑧ Galvanized Iron Plug.
- ⑨ Gate Well Cap with 4" skirt.
- ⑩ Valve Well (see Standard Drawing W-12).

LEGEND ON PLANS



Revision	By	Approved	Date

SAN DIEGO REGIONAL STANDARD DRAWING

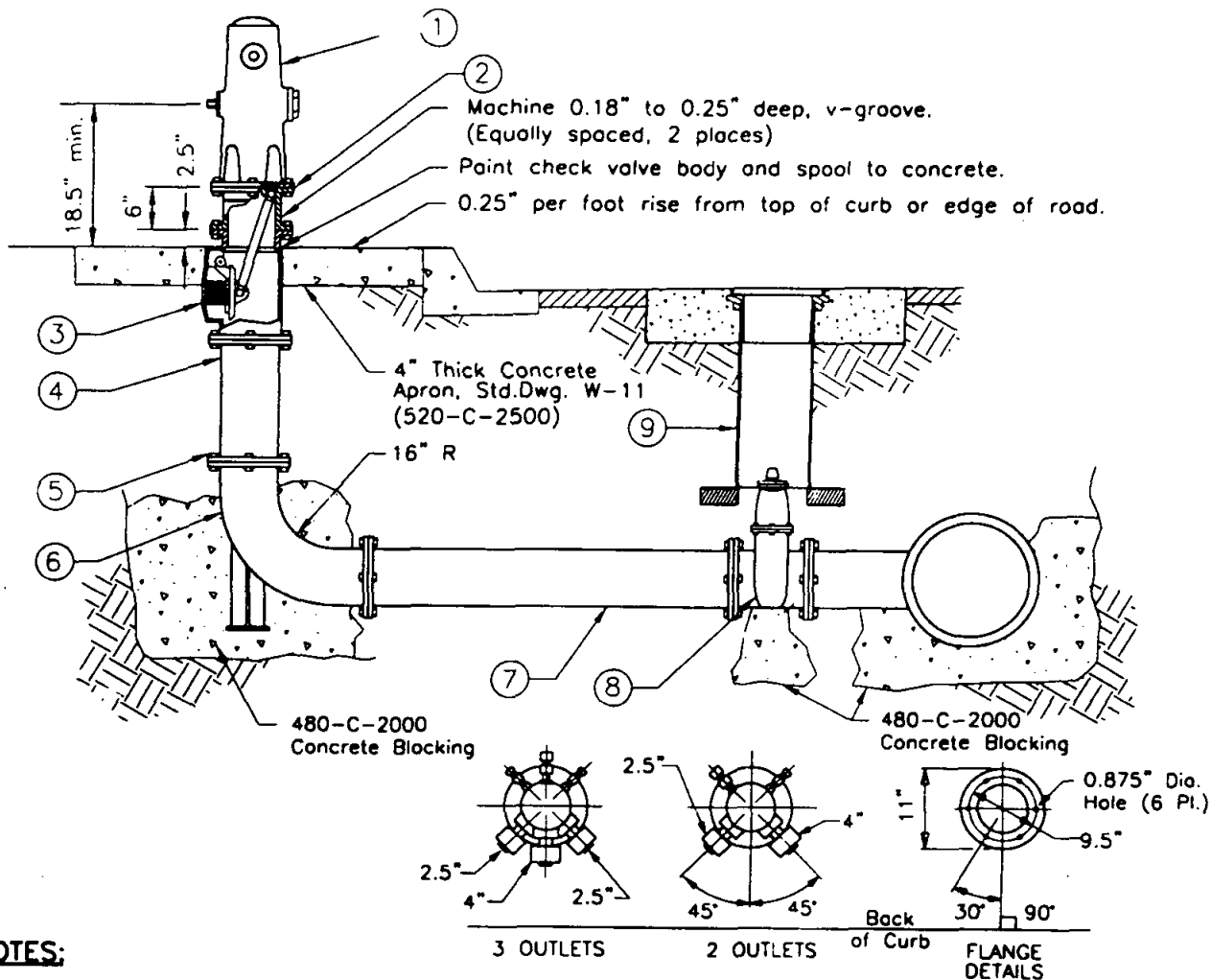
**4" AND 6" BLOW-OFF ASSEMBLIES
TYPE B**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

W-9



NOTES:

1. Items (4) & (7) may be cement lined and coated steel pipe where permitted.
2. Extension Spool callouts (3) & (4) maybe combined as one spool.
- (1) Fire Hydrant
- (2) 6" Extension Spool (Double Machine Grooved)
- (3) Break-Off Check Valve Body or Extension Spool as required by agency or shown on plans
- (4) Extension spool
- (5) 75" X 3" Hex Head Machine Bolts and Nuts (Typical)
- (6) Hydrant Ell
- (7) Polyvinyl Chloride (PVC) or Ductile Iron (DI) Pipe
- (8) Valve with Concrete Support, Std. Dwg. W-19 (Type A)
- (9) Valve Well and Cover, Std. Dwgs. W-12A & W-12B
- (10) See Std. Dwg. W-11 for fire hydrant locations and M-19 for fire hydrant marker location as required by agency.

LEGEND ON PLANS

WITH CHECK VALVE

WITHOUT CHECK VALVE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAWING

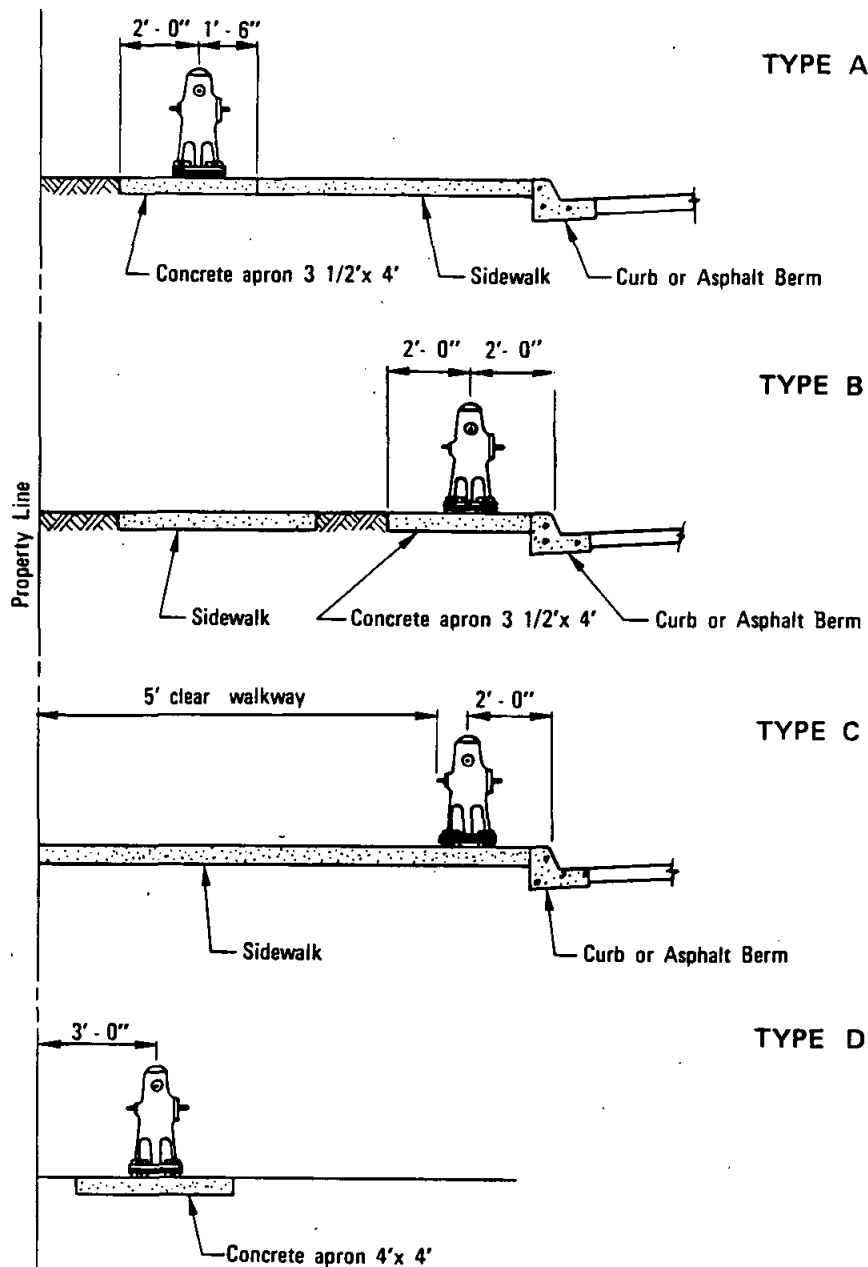
Revision	By	Approved	Date
Legend	NL	RLM	1/97

FIRE HYDRANT INSTALLATION

DRAWING
NUMBER

W-10

Rafael J. Martinez
Coordinator R.C.E. 29513 Date



NOTES:

1. Apron, where required by Agency, shall be 4" thick (520-C-2500) concrete.
2. When distance from hydrant to the top or toe of slope is less than 2'-0", special hydrant installation will be required by Agency.
3. Where hydrant is not protected by a vertical face of curb protective posts are required. See Standard Drawing W-16 for details.
4. The centerline of the hydrant shall be located 5' minimum from curb return and minimum 3'-6" from driveway, pedestrian ramp or any fixed obstruction.

Revision	By	Approved	Date
Notes	RP	M.B.	10-82
Note 4	R	G.H.	9-88

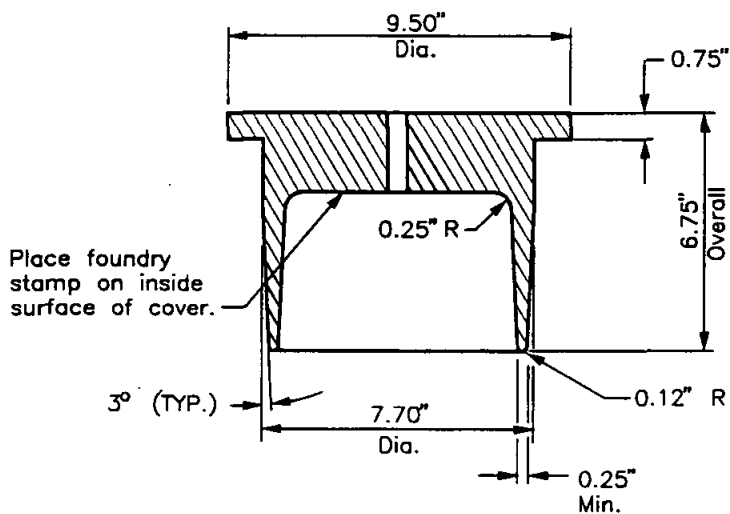
SAN DIEGO REGIONAL STANDARD DRAWING

FIRE HYDRANT LOCATIONS

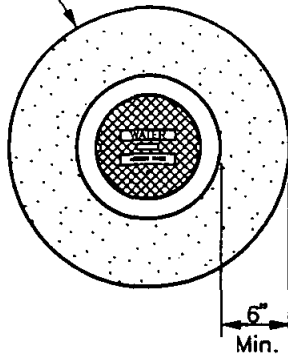
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

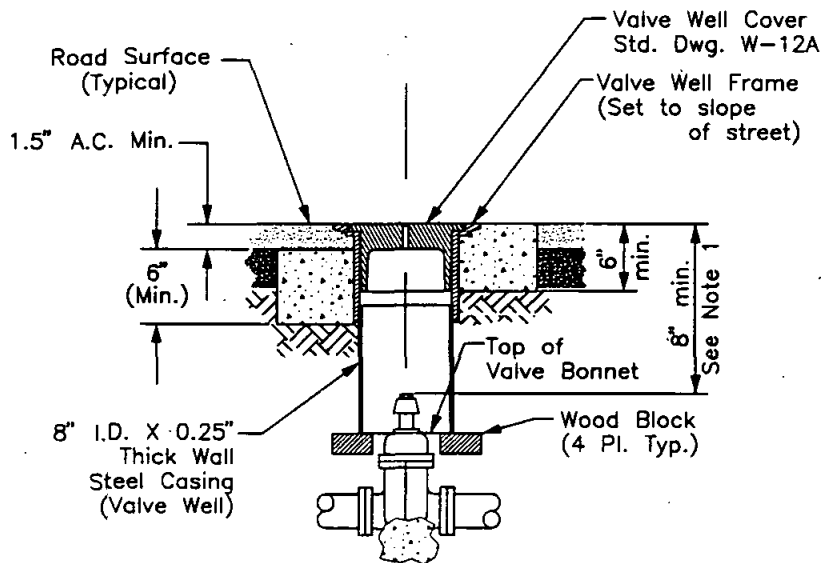
**DRAWING
NUMBER W-11**



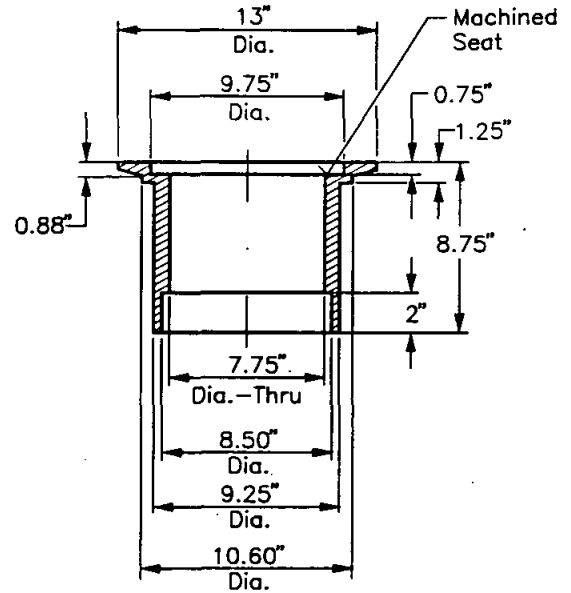
Concrete
560-C-3250



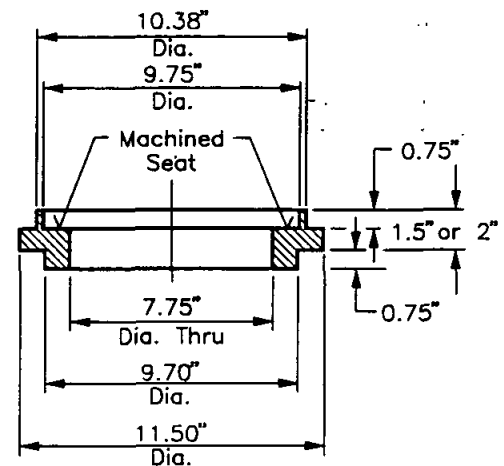
TYPE 1 | TYPE 2



VALVE WELL AND FRAME
For New Installations



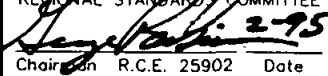
CAST IRON
VALVE WELL FRAME



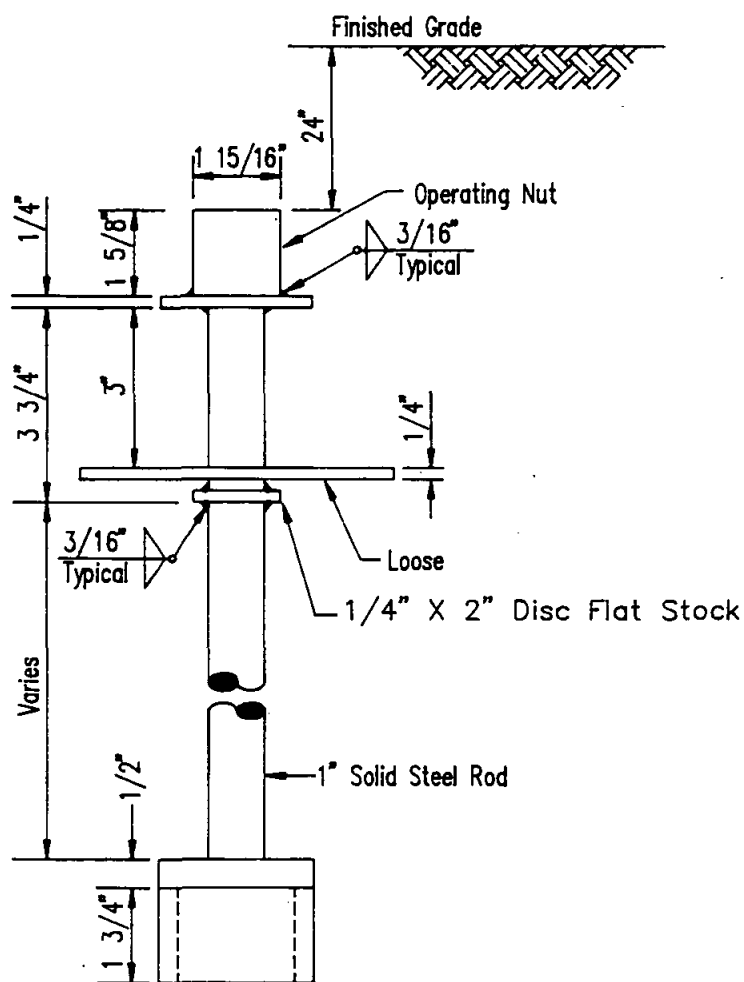
CAST IRON RISER RING
For Retrofitting
and
Overlay Projects

NOTES:

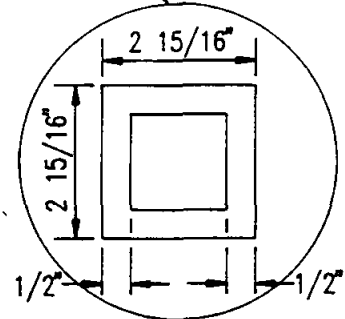
1. Provide valve key extension for all butterfly valves. For gate valves, provide valve key extension where this dimension exceeds 25".
2. The surface of the valve well cover shall match the street cross slope and profile.
3. See Standard Drawing W-13 for valve stem extension when required by agency.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
New Dwg	04	RLM	2/95		
				VALVE WELL FRAME AND ASSEMBLY	 Chairman R.C.E. 25902 Date
				DRAWING NUMBER W-12B	

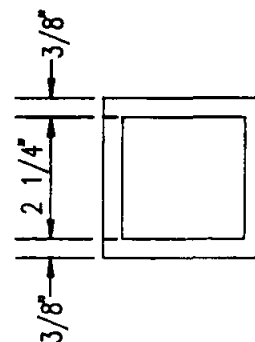
Diameter varies. Make $1/4"$ less than I.D. of can.



ELEVATION



TOP VIEW

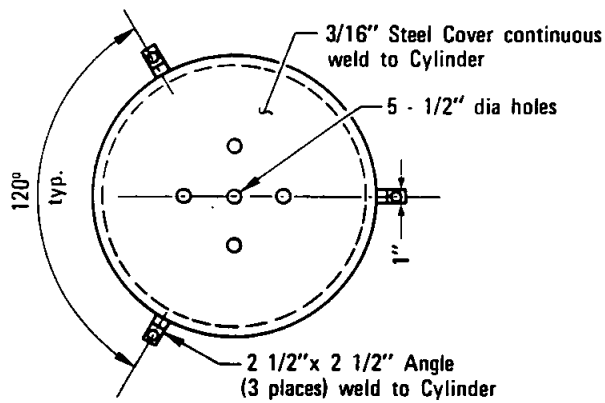


BOTTOM VIEW

NOTES:

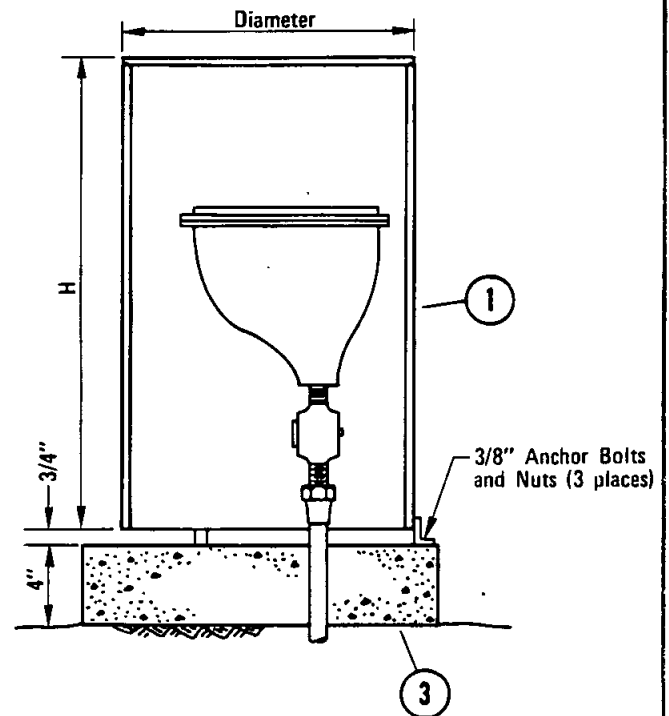
1. Extension to be used when top of operating nut is 5 feet or more below finish grade.
2. Paint all finished surfaces with asphalt varnish.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
				VALVE STEM EXTENSION	
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				Chairman: <i>James R. Smith</i> 5-11-92 Date	
				RCE 25902	
				DRAWING NUMBER W-13	

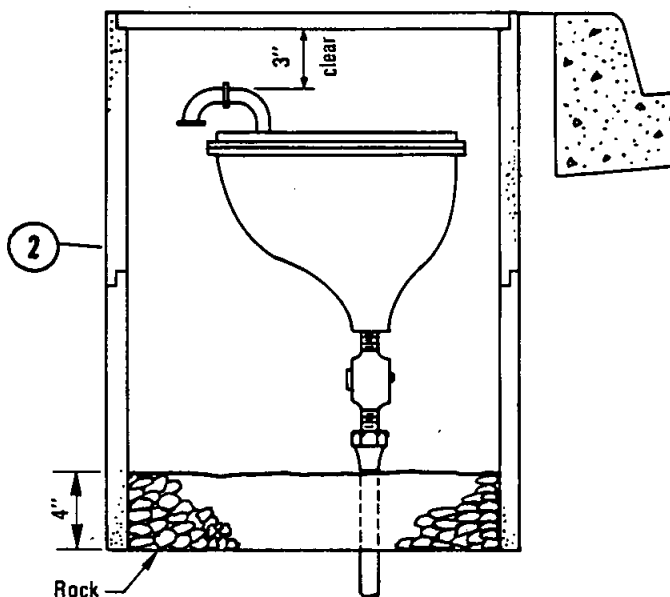


PLAN

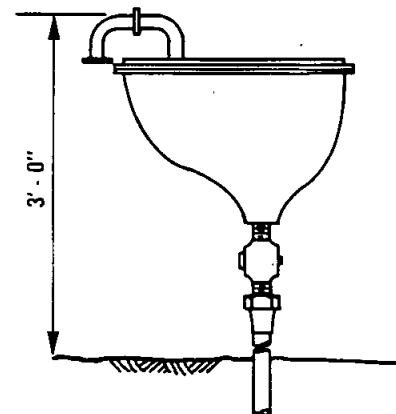
Valve Size	Dia	H
1" & 2"	14"	24"
4"	14"	30"
6"	16"	36"



TYPE A



TYPE B



TYPE C

- ① Steel enclosure, paint as specified by Agency.
- ② Meter box, see Standard Drawing W-15 for location.
- ③ 2' x 2' pad, 470 - C - 2000 Concrete

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

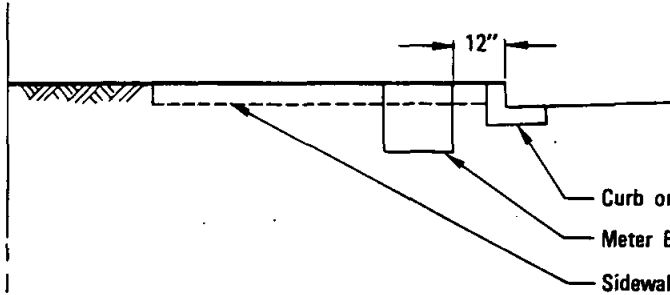
DRAWING
NUMBER

W-14

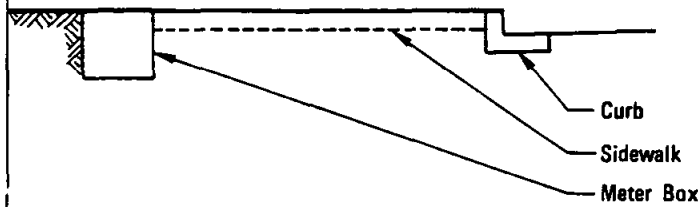
SAN DIEGO REGIONAL STANDARD DRAWING

AIR AND VACUUM VALVE ENCLOSURES

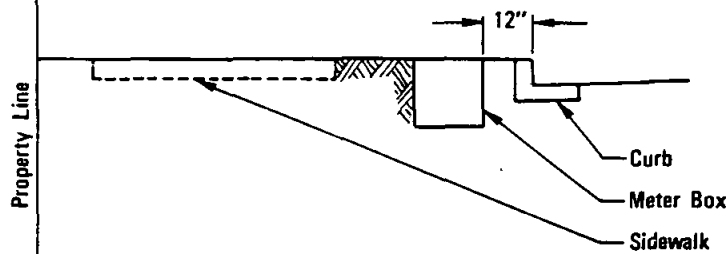
Revision	By	Approved	Date



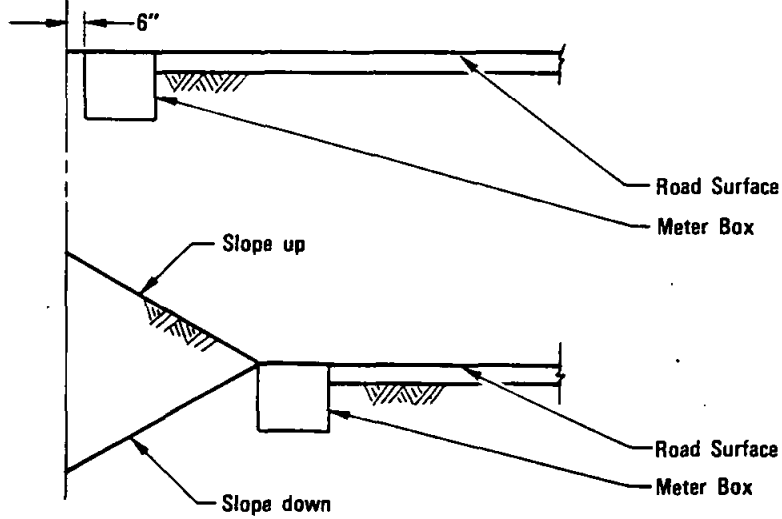
TYPE *A1
WITH OR WITHOUT COMMERCIAL
OR RESIDENTIAL SIDEWALK



TYPE *A2
CONTIGUOUS SIDEWALK



TYPE B
NON-CONTIGUOUS SIDEWALK



TYPE C
NO CURB

TYPE D
NO CURB

* Agency to determine alternate

NOTE:

Meter boxes shall not be located within driveways.

Revision	By	Approved	Date
Note	SC	A.H.	7-88

SAN DIEGO REGIONAL STANDARD DRAWING

METER BOX LOCATIONS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kerschbaum *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **W-15**

100 concrete
y requirements.

Rounded Concrete

3'-0"

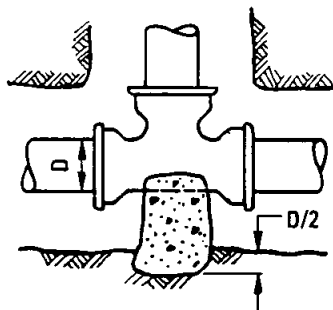
4"

4'-6"

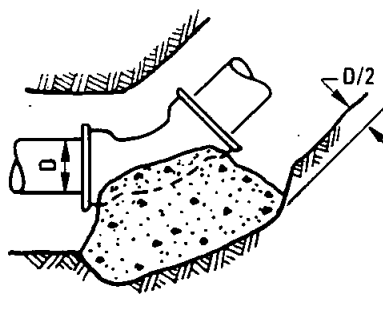
6"

12" dia

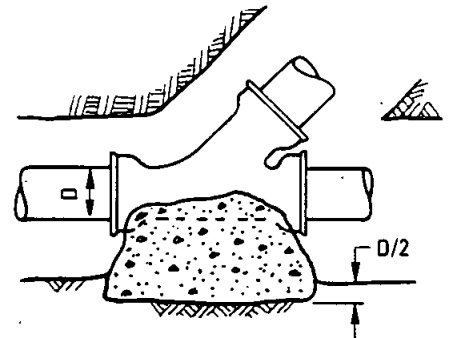
Revision	By	Approved	Date



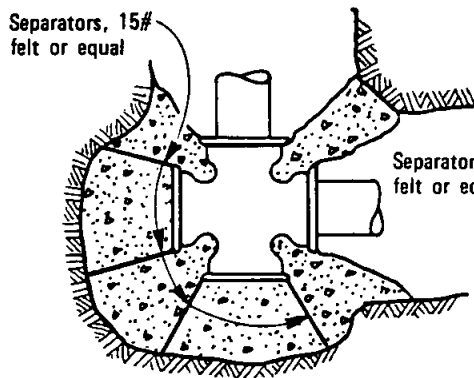
TEE



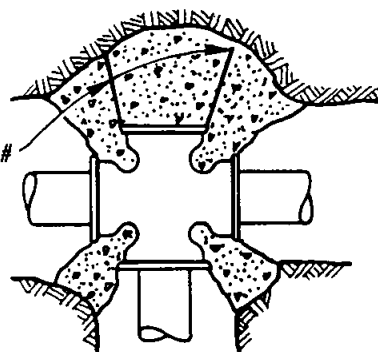
HORIZONTAL OR
VERTICAL BEND



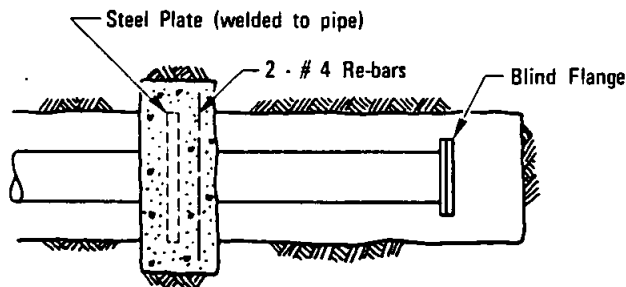
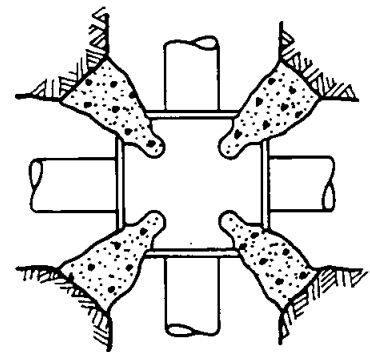
WYE



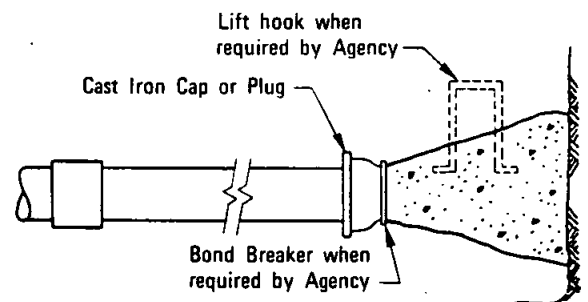
Separators, 15#
felt or equal



CROSS BLOCKING



STEEL PIPE
PLAN



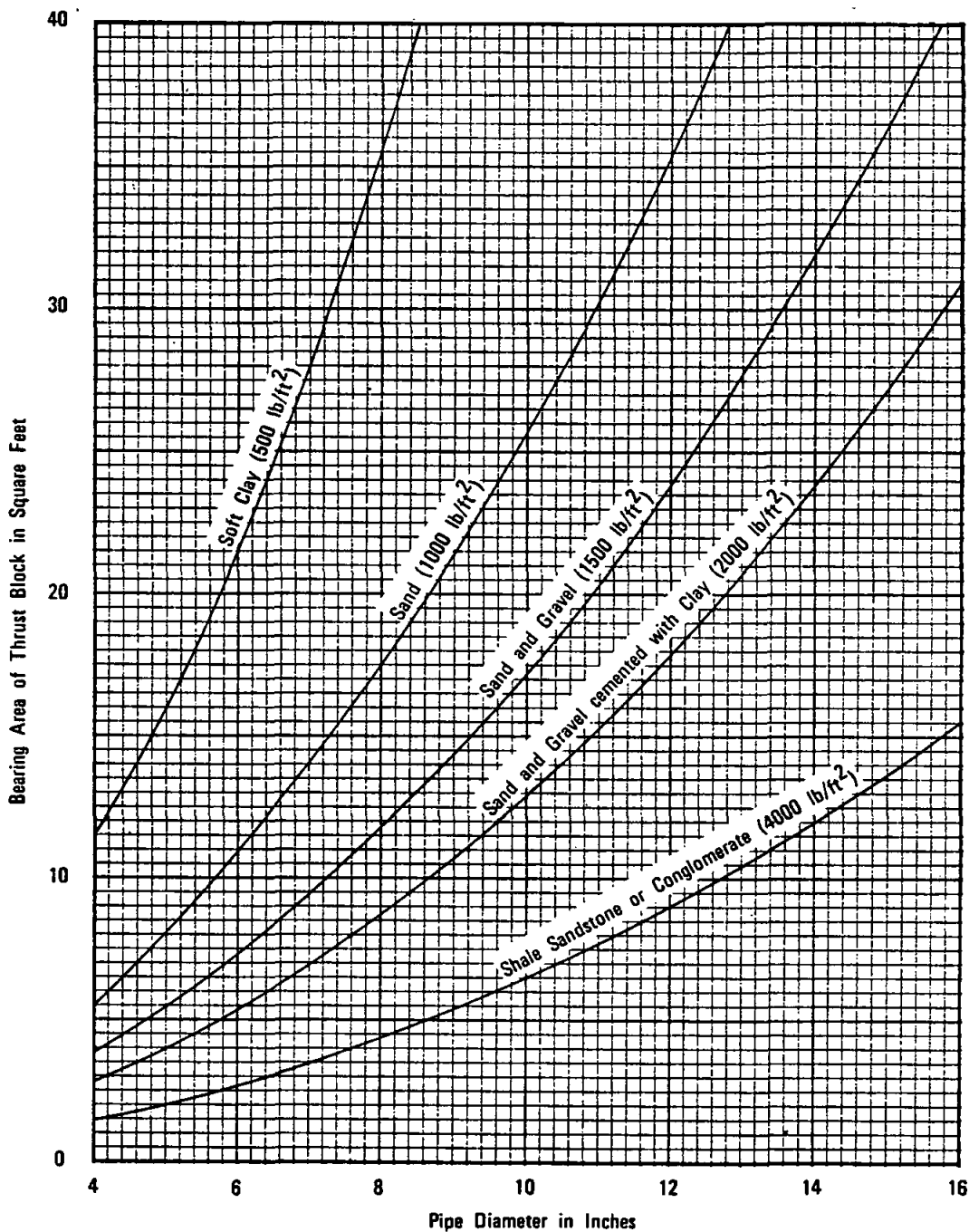
A.C. PIPE
ELEVATION

DEAD END BLOCKING

NOTES

1. Concrete shall be 470 - C - 2000.
2. See Standard Drawing W-18 for bearing areas.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				CONCRETE THRUST BLOCKS		<i>Allard A. Kershner</i>	<i>Dec. 1975</i>
						Coordinator	R.C.E. 19807
							Date
						DRAWING NUMBER	W-17



NOTES

- Based on 225 psi test pressure and bearing values of dry soils.
- Values from curves are for tees and deadends, i.e.; straight line thrust.
For 90° bend: 1.4 value from curve.
For 45° bend: 0.8 value from curve.
For 22 1/2° bend: 0.4 value from curve.
- For conditions not covered by curves, special thrust blocks must be computed and approved.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

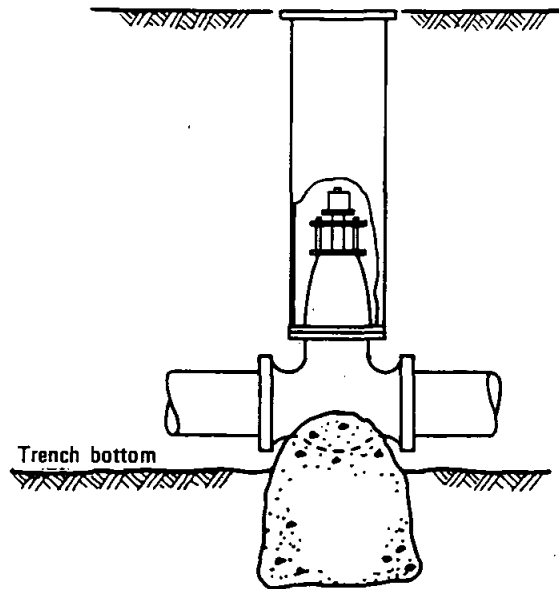
DRAWING
NUMBER

W-18

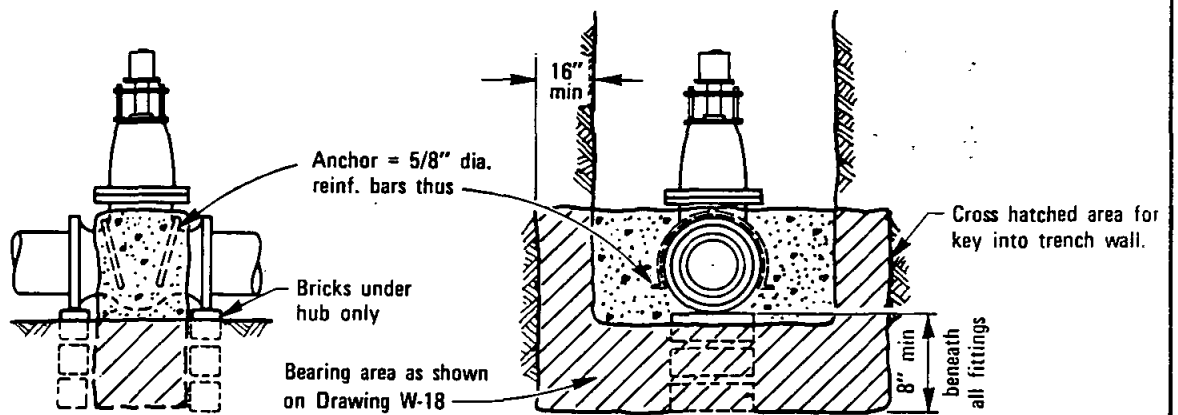
SAN DIEGO REGIONAL STANDARD DRAWING

THRUST BLOCK BEARING AREAS

Revision	By	Approved	Date



TYPE-A SUPPORT BLOCK

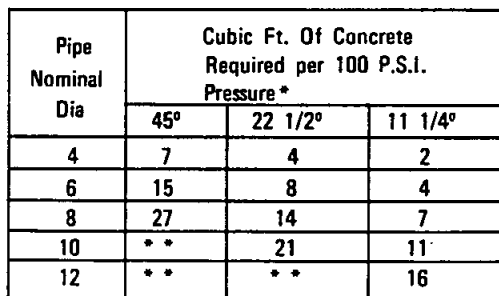


TYPE-B THRUST BLOCK

NOTE

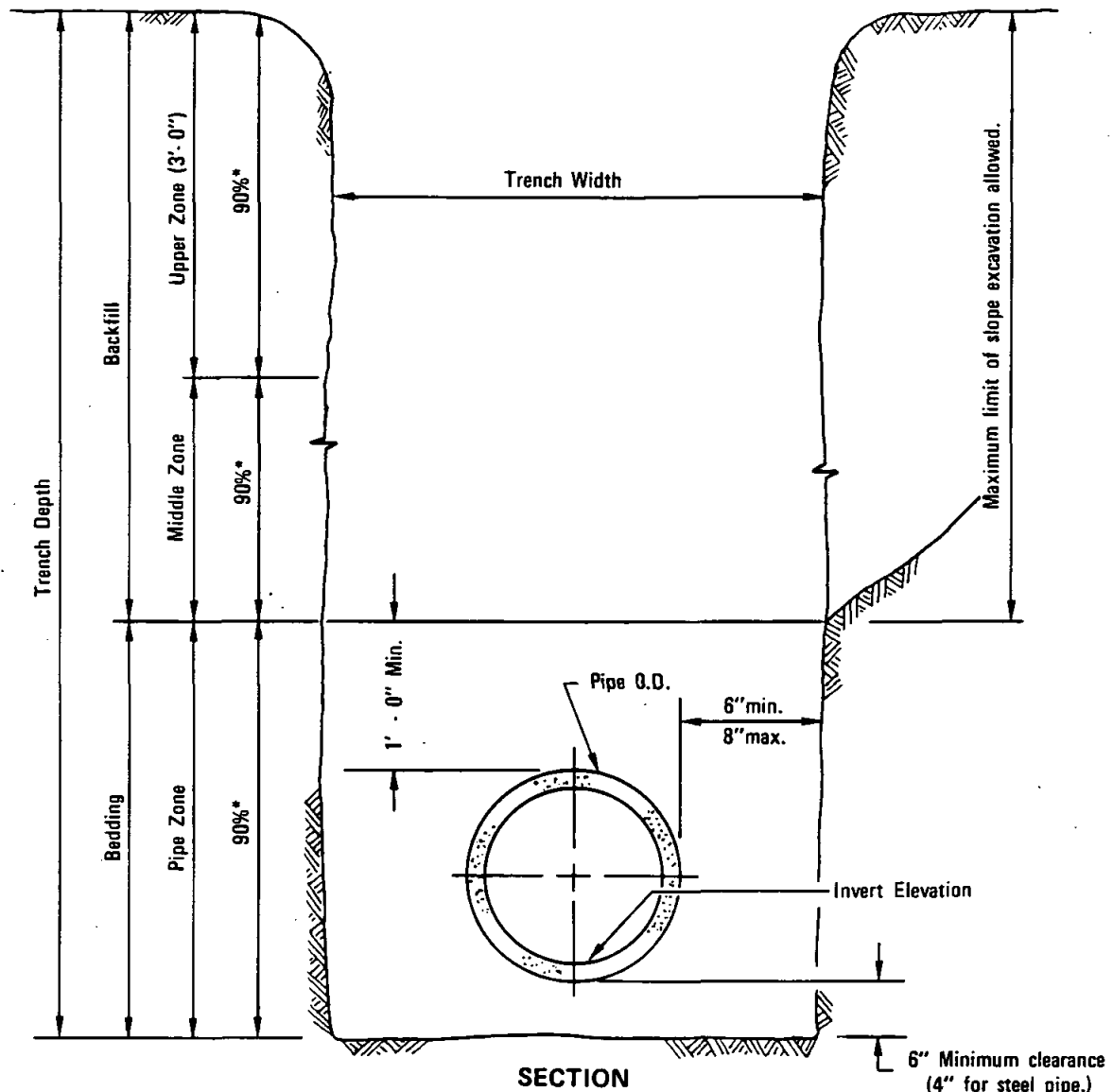
Concrete shall be 470-C-2000.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				CONCRETE VALVE BLOCKING		<i>Allan A. Kershner</i> <i>Dec. 1975</i>
						Coordinator R.C.E. 19807 Date
						DRAWING NUMBER W-19



- * Increase volumes shown in proportion to pressures existing when pressure testing pipeline.
- * * Special design required.

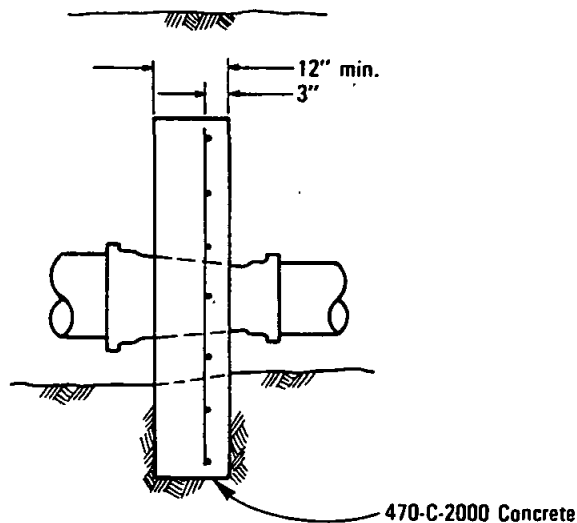
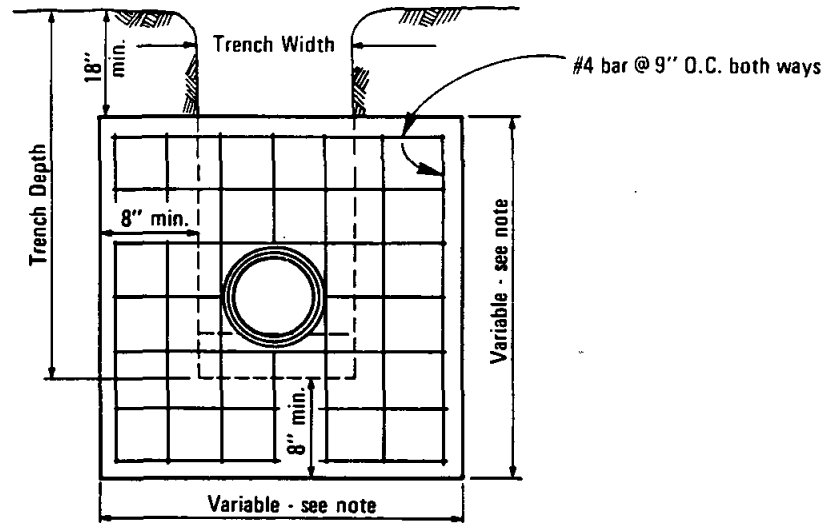
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Alfred G. Kuehnel</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	SAN DIEGO REGIONAL STANDARD DRAWING ANCHOR BLOCK (VERTICAL BEND ONLY)	Revision 	By 	Approved 	Date
DRAWING NUMBER W-20					



NOTES

1. For trenching on improved streets see standard drawing G-24 or G-25 for resurfacing details.
2. (*) indicates minimum relative compaction.
3. Bedding material shall either be sand, gravel, crushed aggregate or native free draining granular material having a sand equivalent (SE) of not less than (50) and an expansion coefficient, when saturated with water, of not more than 0.5 of one percent (0.5%).

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Section	SC	D.S.	7-79	PIPE BEDDING AND TRENCH BACKFILL FOR WATER MAINS		<i>Allen A. Kerschbaum</i> Dec. 1975
Reference	RP	M.B.	10-82			Coordinator R.C.E. 19807 Date
Compact.	CO	M.B.	5-86			
Note 3	SP	SC	5-92			
				DRAWING NUMBER		W-21



NOTE:

Bearing area shall be the difference between the bearing areas required for thrust anchorage of mains on each side of reducer as found from Std. Dwg. W-18 plus the area of the trench opening, except that minimum dimensions shown shall be adhered to.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

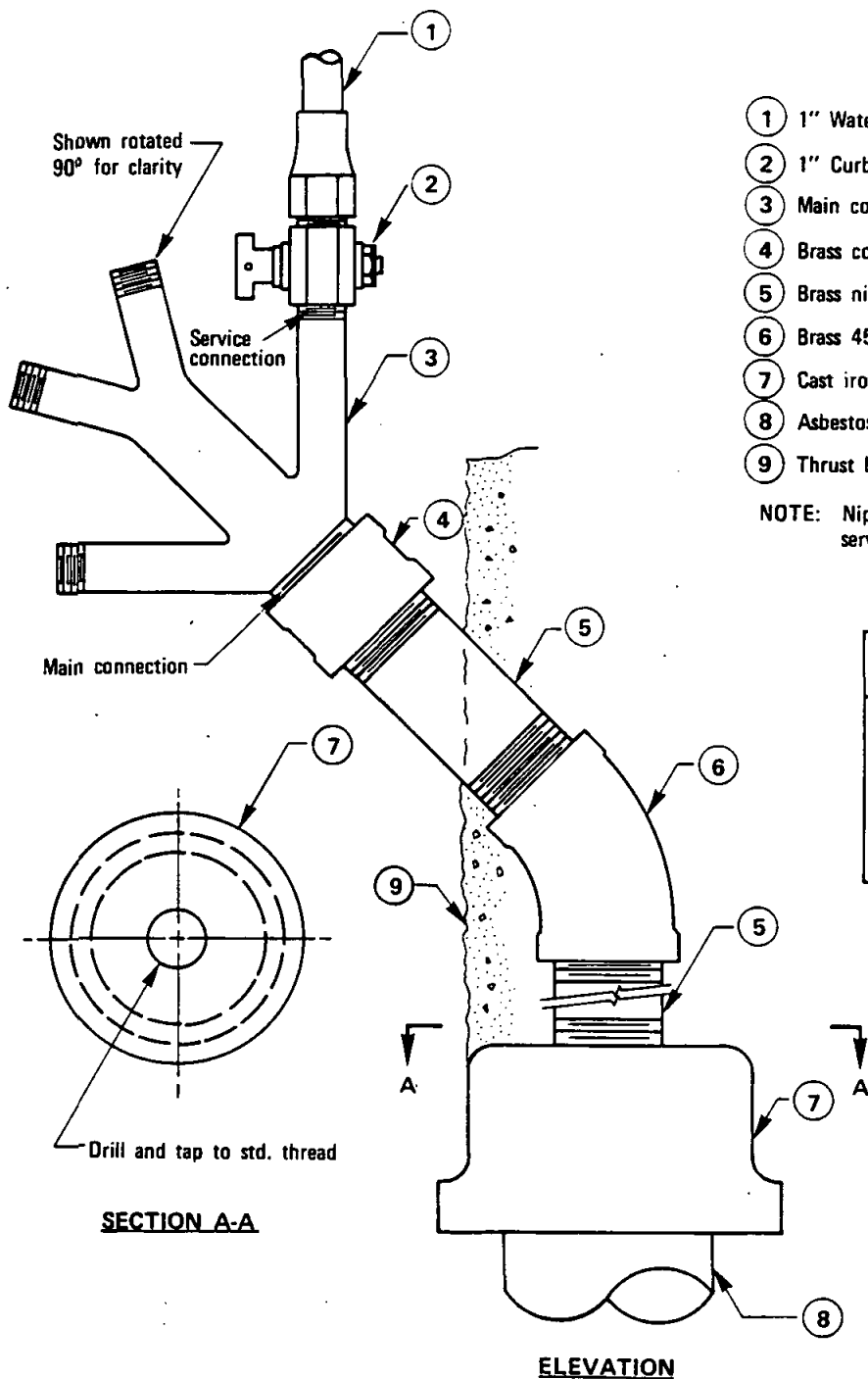
David J. Solomon July 1979
Coordinator R.C.E. 25291 Date

DRAWING
NUMBER **W-22**

SAN DIEGO REGIONAL STANDARD DRAWING

**THRUST ANCHOR FOR
WATER MAIN REDUCER - 4 THRU 16 INCH**

Revision	By	Approved	Date

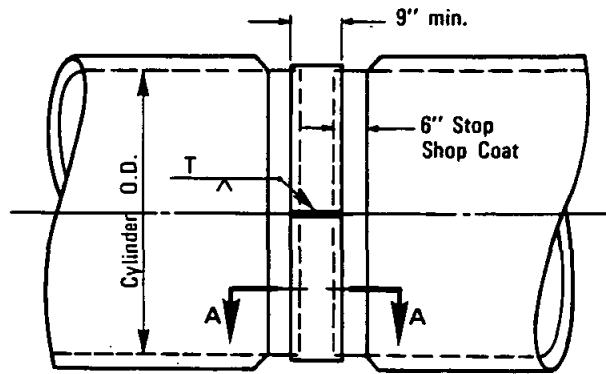


- ① 1" Water service per Dwg W-1
- ② 1" Curb stop
- ③ Main connection X multiple branch connection
- ④ Brass coupling or 45° elbow
- ⑤ Brass nipple - 4" min. length
- ⑥ Brass 45° elbow
- ⑦ Cast iron cap
- ⑧ Asbestos cement pipe
- ⑨ Thrust block per Dwg W-17

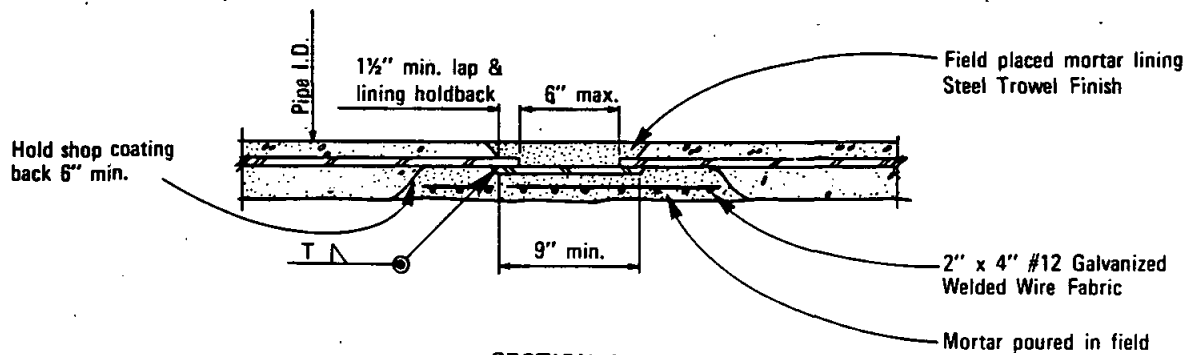
NOTE: Nipple lengths to be sufficient to allow service connection to clear thrust block.

Service Connection	Main Connection Item 5
2	1 1/4"
3	1 1/2"
4	2"
6	2 1/2"
8	3"

Revision	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
			MULTIPLE SERVICE ASSEMBLY DEAD END MAIN		<div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></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ELEVATION



SECTION A-A

NOTE:

Contractor shall provide handholes as required to complete the work

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

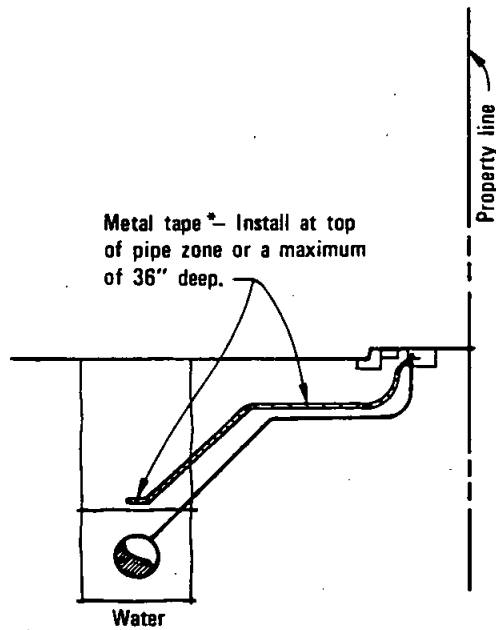
David J. Salomon *July 1979*
Coordinator R.C.E. 25291 Date

SAN DIEGO REGIONAL STANDARD DRAWING

SPLIT BUTT STRAP

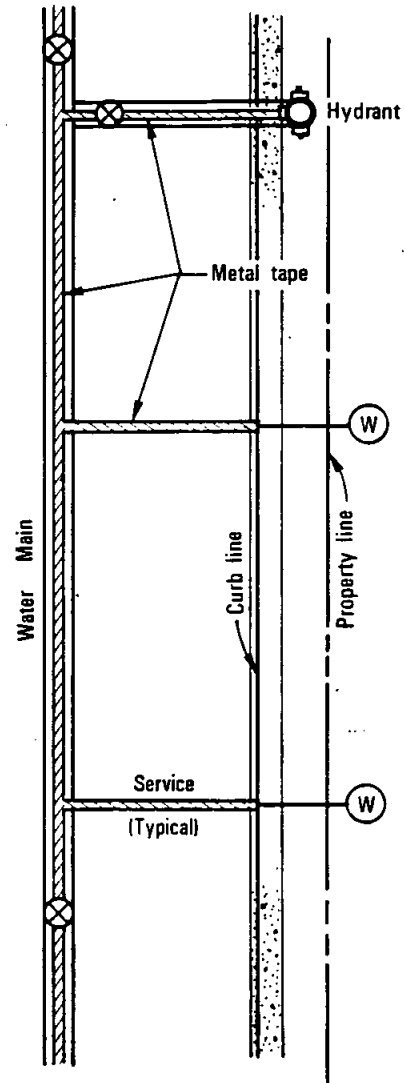
DRAWING
NUMBER **W-24**

Revision	By	Approved	Date



SECTION

- * 1. Use 2" tape for depths of 30" or less.
- 2. Use 3" tape for depths greater than 30".
- 3. Adequately bond service tape to main tape to ensure electrical continuity.
- 4. Tape shall extend into service box or well casing to allow for mark-out by continuity tester.



PLAN

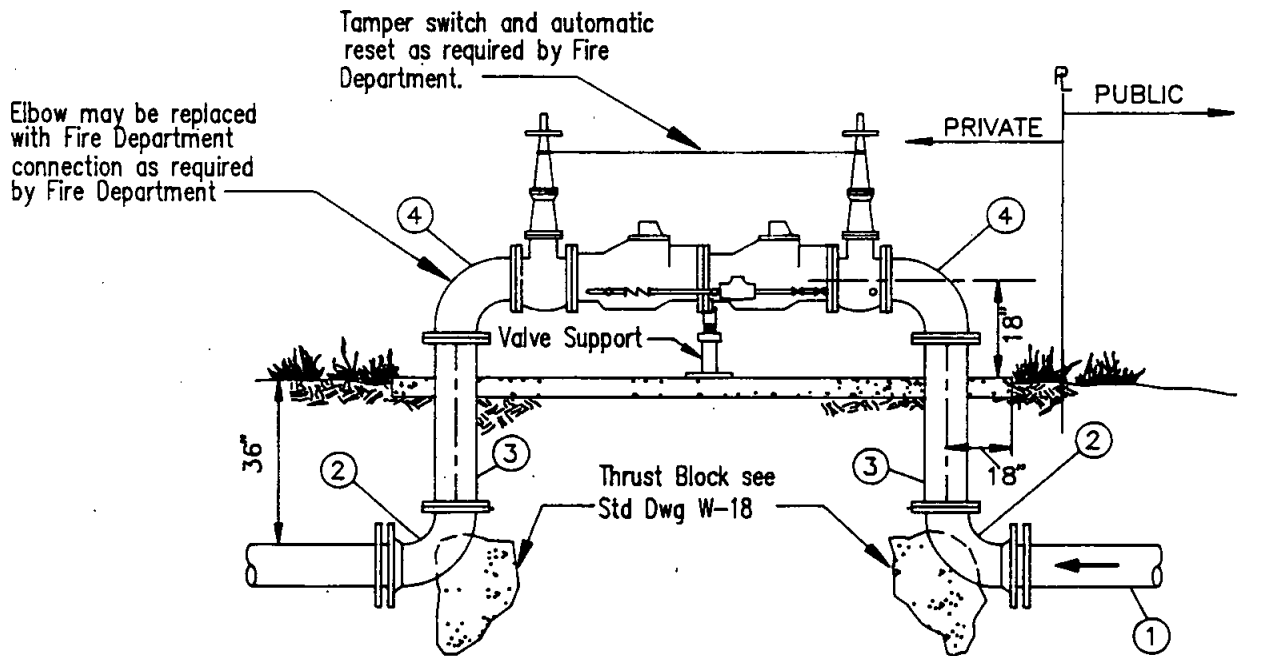
Revision	By	Approved	Date
Notes 3,4	JP	G.D.	5/92

SAN DIEGO REGIONAL STANDARD DRAWING

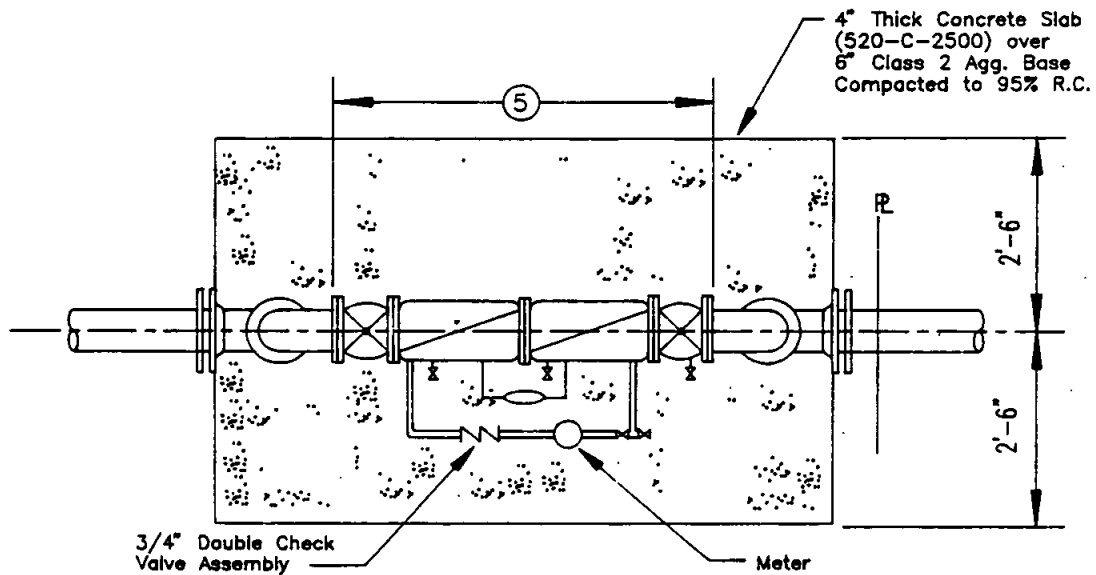
METALLIC TAPE LOCATOR FOR NON-METALLIC WATER PIPE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
M. Behrman 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **W-25**



ELEVATION



PLAN

NOTES

1. Public water main.
2. 90° ductile iron elbow: flange x flange; flange x ring tight; flange x mechanical joint (uni-flange shall not be used).
3. Flanged ductile iron spool (both ends shall be flanged).
4. 90° flanged ductile iron elbow.
5. Factory assembled Double Checked Detector Assembly/Reduced Pressure Detection Assembly with resilient seat shut off. Valves approved by the Dept. of Health Services, Office of Drinking Water.
6. Backflow preventer assembly shall be tested upon installation by a certified backflow assy. tester. Contractor shall provide the Engineer with written test results completed by a certified tester prior to the acceptance by the Engineer.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAWING

Revision By Approved Date

DRAWING
NUMBER W-26

BACKFLOW PREVENTER
REDUCED PRESSURE PRINCIPLE

Revision	By	Approved	Date

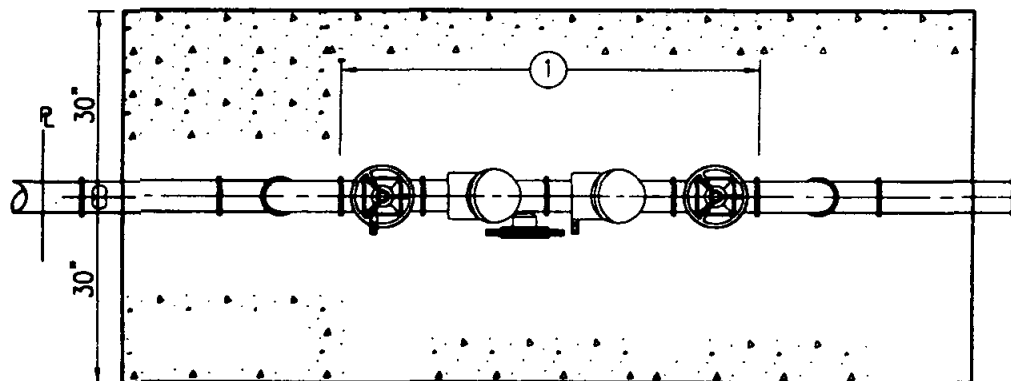
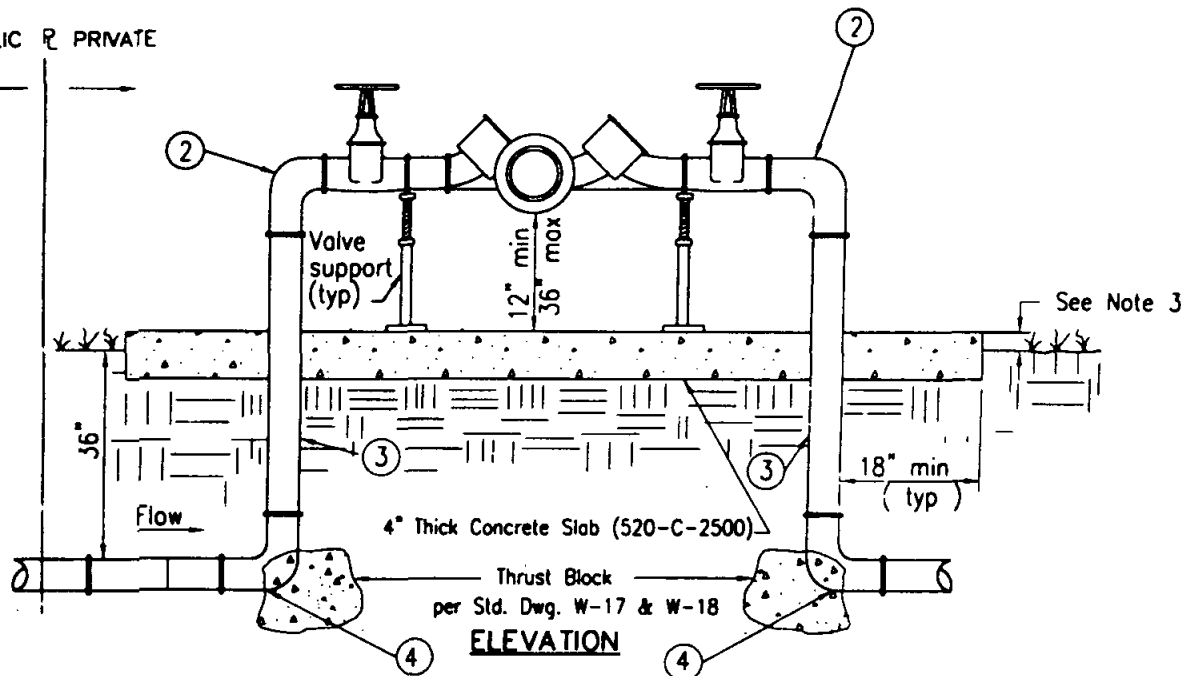


- LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING BACKFLOW PREVENTER REDUCED PRESSURE PRINCIPLE ASSEMBLY 2" AND SMALLER	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Robert J. Murray</i> <i>SPK</i> Coordinator R.C.E. 9513/Dot
					DRAWING NUMBER W-27

PUBLIC & PRIVATE



NOTES:

1. Backflow assembly shall be tested upon installation by a certified backflow assembly tester.
2. All pipe below grade shall be wrapped as required by agency.
3. Concrete pad to be 2" above grade unless installed in lawn area where it will be at 1" above grade. Slope to drain.
4. Protective enclosure for backflow preventer assembly shall be used at the discretion of the property owner.
- ① Reduced Pressure Principle Detection Assembly shall be included in the latest edition of the "Approved for Service Isolation California Public Water Systems" issued by the State of California, Department of Health Services, Office of Drinking Water.
- ② 90° Flanged cast iron or ductile iron elbow (typ)
- ③ Flanged ductile iron spool. Both ends shall be flanged (uni-flange shall not be used)
- ④ 90° ductile iron flanged elbow

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAWING

Revision	By	Approved	Date

**BACKFLOW PREVENTER REDUCED
PRESSURE PRINCIPLE DETECTOR ASSEMBLY
3" AND LARGER**

DRAWING
NUMBER **W-28**

Revised 3/21/87
Coordinator R.C.E. Date

APPENDIX "A"

TRAFFIC CONTROL PLANS

TRAFFIC CONTROL PLANS

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REVISION	BY	APPROVED	DATE	SAN DIEGO REGIONAL STANDARD - APPENDIX "A"	DWG. NO.
				TRAFFIC CONTROL PLANS	TC

TRAFFIC CONTROL PLANS

GENERAL INFORMATION

The Traffic Control Plans depicted in this Appendix are intended to supplement Chapter 5 of the Caltrans Manual in providing guidance and information on preparing traffic control plans in an urban environment. Other references, such as the "W.A.T.C.H." manual, may also provide useful information on traffic control procedures. It should be understood that implementation of traffic control plans must conform with the latest edition of the Caltrans Traffic Manual (Chapter 5).

Chapter 5 of the Caltrans Traffic Manual, Traffic Controls for Construction and Maintenance Work Zones, is published by the State of California, Department of Transportation (Caltrans). This manual is issued to provide the basic standards for uniform types of warning signs, lights, and devices to be placed upon any public roadway or street by a person engaged in performing work which interferes with or endangers the safe movement of traffic upon such highway or street, in accordance with Section 21400 of the California Vehicle Code.

It is the responsibility of the Contractor or Organization performing work on, or adjacent to, a roadway to install and maintain such devices which are necessary to provide safe passage for the traveling public through the work area and for the safety of the workers. Before work begins, traffic control plans for handling traffic through a construction or maintenance project shall be approved by the engineer of the public agency or authority having jurisdiction over the roadway.

Typical plans for intersections that are controlled by a traffic signal or a multi-way stop are not identified in this Appendix. These intersections require special attention in the preparation of traffic control plans. The approving agency should be notified prior to the preparation of traffic control plans when the work is in or near these intersections.

Special attention is also needed on the traffic control plans when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Notification of the approving agency is desirable prior to the preparation of the plan when bicycles and pedestrian routes are affected by the work.

Nothing contained in this Appendix shall prevent local jurisdictions from modifying, changing, or adopting new specifications deemed necessary. The text and typical drawings in this Appendix are not a legal standard. Criteria for position, location, and use of traffic control devices is furnished solely for the purpose of guidance and information to assist in the preparation of traffic control plans.

Revision	By	Approved	Date	APPENDIX "A" SAN DIEGO REGIONAL STANDARD		
DRAWING	DWV		4-91			
ORIG.		<i>[Signature]</i>	10-8-91	TRAFFIC CONTROL PLANS		
		<i>[Signature]</i>	10-4-94			
				GENERAL INFORMATION		DRAWING NUMBER TC-1

TRAFFIC CONTROL PLANS

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			DRAWING	DWV		4-
			DRAWING	FMM		8-
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				WJ	<i>[Signature]</i>	8-3-94

TRAFFIC CONTROL PLANS

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ORIG.		<i>[Signature]</i>	10-8-91	TRAFFIC CONTROL PLANS		
		<i>[Signature]</i>	8-3-94			
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TABLE 1

RECOMMENDED SIGN SPACING FOR ADVANCE WARNING SIGN SERIES

APPROACH SPEED (MPH)	MINIMUM DISTANCE IN FEET BETWEEN SIGNS AND FROM LAST SIGN TO TAPER	MAXIMUM DEVICE SPACING IN FEET	MINIMUM TAPER LENGTHS FOR LANE WIDTHS *		
			10 FT	11 FT	12 FT
25	150-200	25	105	115	125
30	200-300	30	150	165	180
35	250-400	35	205	225	245
40	350-500	40	265	295	320
45	500-750	45	450	495	540
50	500-1000	50	500	550	600
55+	500-1500	50	550	605	660

* $L = WS^2/60$ FOR S OF 40 MPH OR LESS; $L = WS$ FOR S GREATER THAN 40 MPH.
TAPER LENGTHS SHOWN ARE ROUNDED TO NEAREST 5 FEET.

TABLE 2

RECOMMENDED TAPER LENGTH AND DEVICE SPACING FOR CHANNELIZING TAPERS

APPROACH SPEED (MPH)	TAPER LENGTH (L) *	SPACING OF CONES ALONG TAPER (FEET) +
25	125	25
30	180	30
35	245	35
40	320	40
45	540	45
50	600	50
50+	1000	50

NOTES:

Taper Formula

$L = S \times W$ for speeds greater than 40 mph.

$L = \frac{W \times S^2}{60}$ for speeds of 40 mph or less

Where:

L = Minimum length of taper

S = Numerical value of
APPROACH speed prior
to work (mph)

W = Width of offset. (feet)

(*) Based on 12-foot wide lane. This column
is also appropriate for lane widths less than 12 feet

APPENDIX "A"

SAN DIEGO REGIONAL STANDARD

DEVICE SPACING TABLES

SIGN SPACING TABLE

TAPER LENGTH AND CONE SPACING TABLE

Revision	By	Approved	Date
DRAWING	DWV		4-91
	FMM		8-91
ORIG.	WAJ	<i>[Signature]</i>	10-8-91
	DGB	<i>[Signature]</i>	8-28-94
			9-14-95

DRAWING
NUMBER TC-4

TRAFFIC CONTROL PLAN/PERMIT & PERMIT EXTENSION

Public Utility or Company: _____ Address: _____ City: _____ State: _____ Zip Code: _____	Project Contact: _____ Address: _____ City: _____ State: _____ Zip Code: _____	24 Hour Local Phone: _____ Cellular: _____ Pager: _____ Fax: _____
Contractor/ Subcontractor: _____ Address: _____ City: _____ State: _____ Zip Code: _____	Project Contact: _____ Address: _____ City: _____ State: _____ Zip Code: _____	24 Hour Local Phone: _____ Cellular: _____ Pager: _____ Fax: _____

JOB LOCATION	BEGIN CROSS STREET	END CROSS STREET	PERMIT NO.
WORK HOURS continuous FROM _____ A.M. TO _____ A.M. P.M.	SPEED LIMIT	WORK TO BE DONE	THOMAS BROS. PAGE: _____
START DATE	END DATE	1st WORK DATE EXTENSION FROM	TO NEW END DATE
		2nd WORK DATE EXTENSION FROM	TO NEW END DATE

PERMIT WORK EXTENSIONS MUST BE OBTAINED BY THE END OF PERMIT DATE

REQUIREMENTS: 1. The contractor is responsible for promptly restoring the road back to satisfactory condition which includes, but is not limited to, paving, striping, markings, signing, and loop detection. 2. The Agency reserves the right to observe these traffic control plans in operation and to make changes as field conditions warrant. 3. Trenches shall be back-filled or steel-plated during non-work hours. Steel plates shall have an asphaltic ramp on all edges, securely supported so they won't rock and a sign posted near the plates identifying the contractor's name and 24 hour emergency telephone number.	3. (cont.) All dirt, dust, and debris shall be removed from the street at the end of each day and at the end of the job. The street shall be kept in a driveable condition at all times. 4. Any work that creates an undue safety risk or that creates severe congestion will be shut down by the agency. 5. A copy of all traffic requirements and traffic control plans issued by the Agency must be kept on the job site. 6. Approval of this plan does not constitute an official Permit. Contact the Agency for information on obtaining a permit.	7. All travel lanes will typically be a minimum of 12 feet wide, 14 feet if adjacent to bike lanes, unless otherwise specifically approved by the Agency. 8. Flashing arrow boards as required by the Agency. 9. Warning (W) series signs used in work zones shall be Black on an Orange background. 10. Cones and pylons shall have yellow reflectorized sleeves when placed along the centerline and white reflectorized sleeves along the outside shoulder. 11. If Parking is allowed in the advance warning area, advance warning signs shall be mounted on high level devices.	12. The contractor shall post tow-away/no parking signs twenty-four (24) hours in advance, with day of week, date and work hours noted, and shall bag parking meters (where applicable). The applicant is responsible for complete representation of the actual road conditions shown on this plan including, but not limited to, existing striping, signing, sidewalks and bike lanes. APPLICANTS : Name (print) _____ Address _____ Phone Number _____ Signature _____ Agent of: <input type="checkbox"/> Owner <input type="checkbox"/> Contractor <input type="checkbox"/> Sign/Barricade co. <input type="checkbox"/> Other _____	THIS TRAFFIC CONTROL PLAN IS NOT VALID UNLESS AN APPLICABLE AGENCY PERMIT OR APPROVAL IS ATTACHED/AFFIXED PERMIT APPROVED BY: _____ DATE: _____
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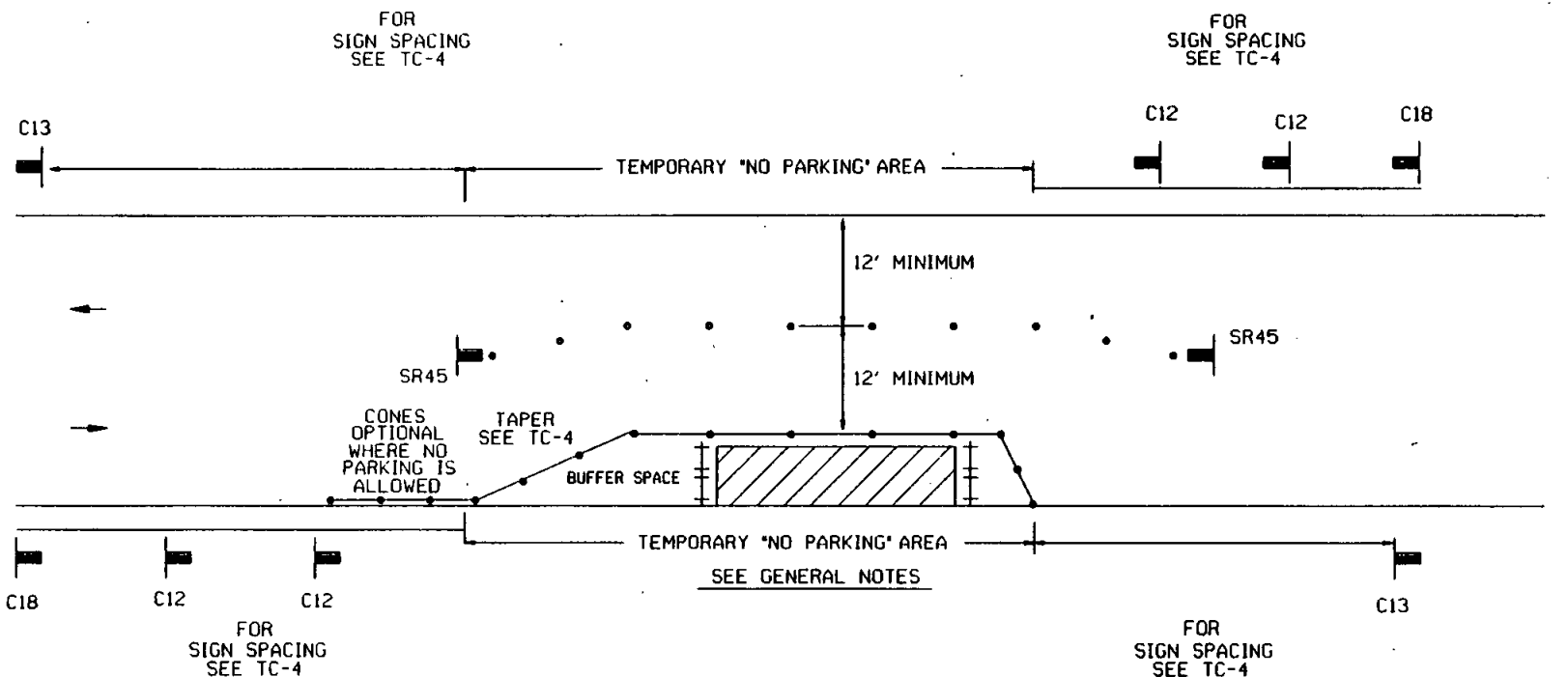
* SUBJECT TO LOCAL AGENCY REQUIREMENTS.

SEE ATTACHED SHEET(S) OR REFERENCED STANDARD DRAWING(S) THAT MAY BE APPLICABLE

TRAFFIC CONTROL PLAN
 SAN DIEGO REGIONAL STANDARD
 APPENDIX "A"
 COVER SHEET
 DRAWING NUMBER TC-5

DRAWING
NUMBER

TC-6

SIDE OF ROAD WORK AREA
TWO LANE TRAFFIC CONTROL
WITHOUT CENTERLINEAPPENDIX "A"
SAN DIEGO REGIONAL STANDARD

LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

Revision
By Approved Date

DRAWING

ORIG.

WAL

DOB

10-20-95

10-20-95

10-20-95

10-20-95

AGENCY USE

APPLICANT USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-7



- AGENCY ENGINEER'S COMMENTS

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

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SUBMITTED BY:

NAME _____

COMPANY _____

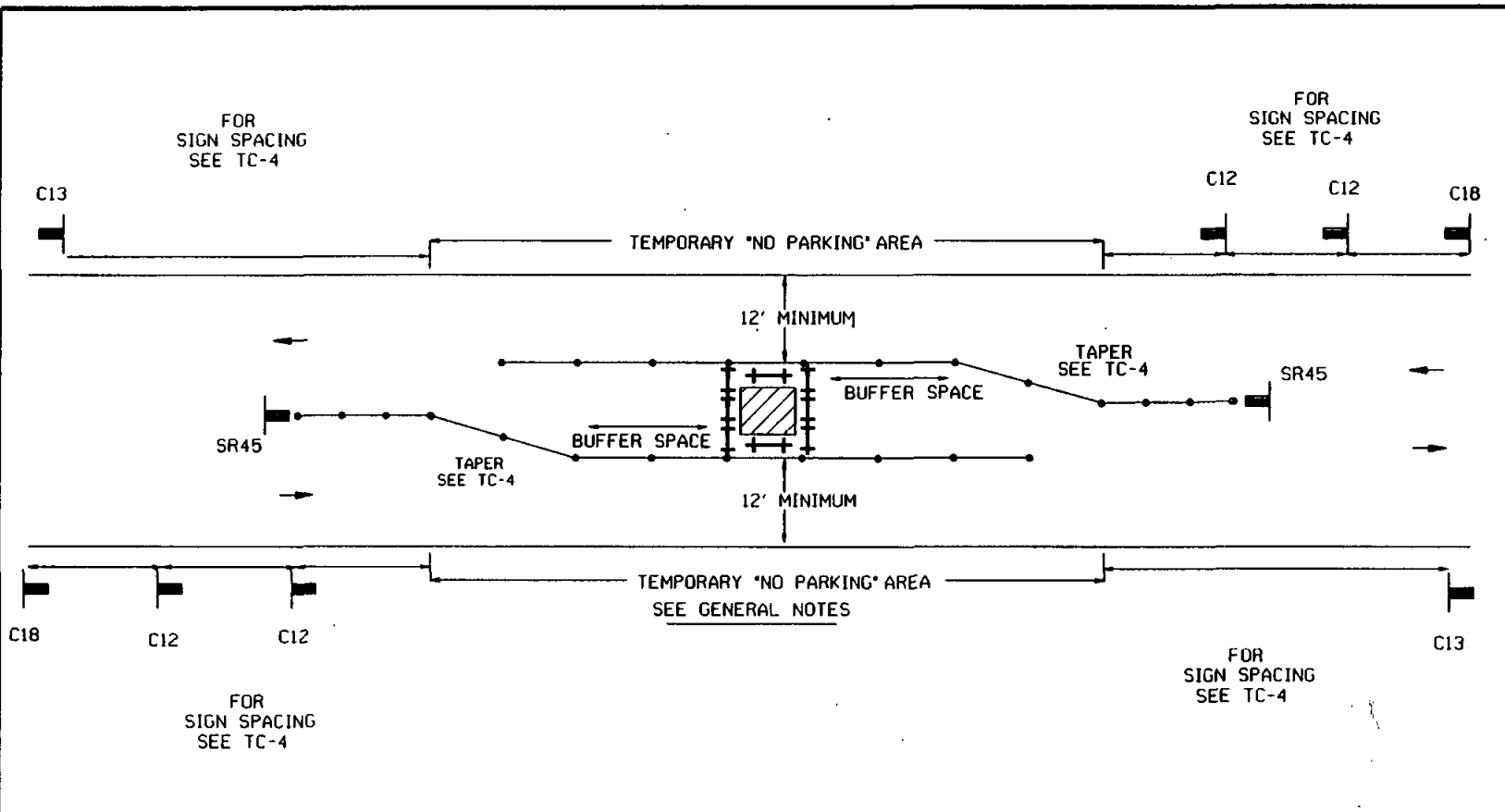
ADDRESS _____

PHONE _____

DRAWING
NUMBER **TC-8**

CENTER OF ROAD WORK AREA TWO LANE TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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SUBMITTED BY:

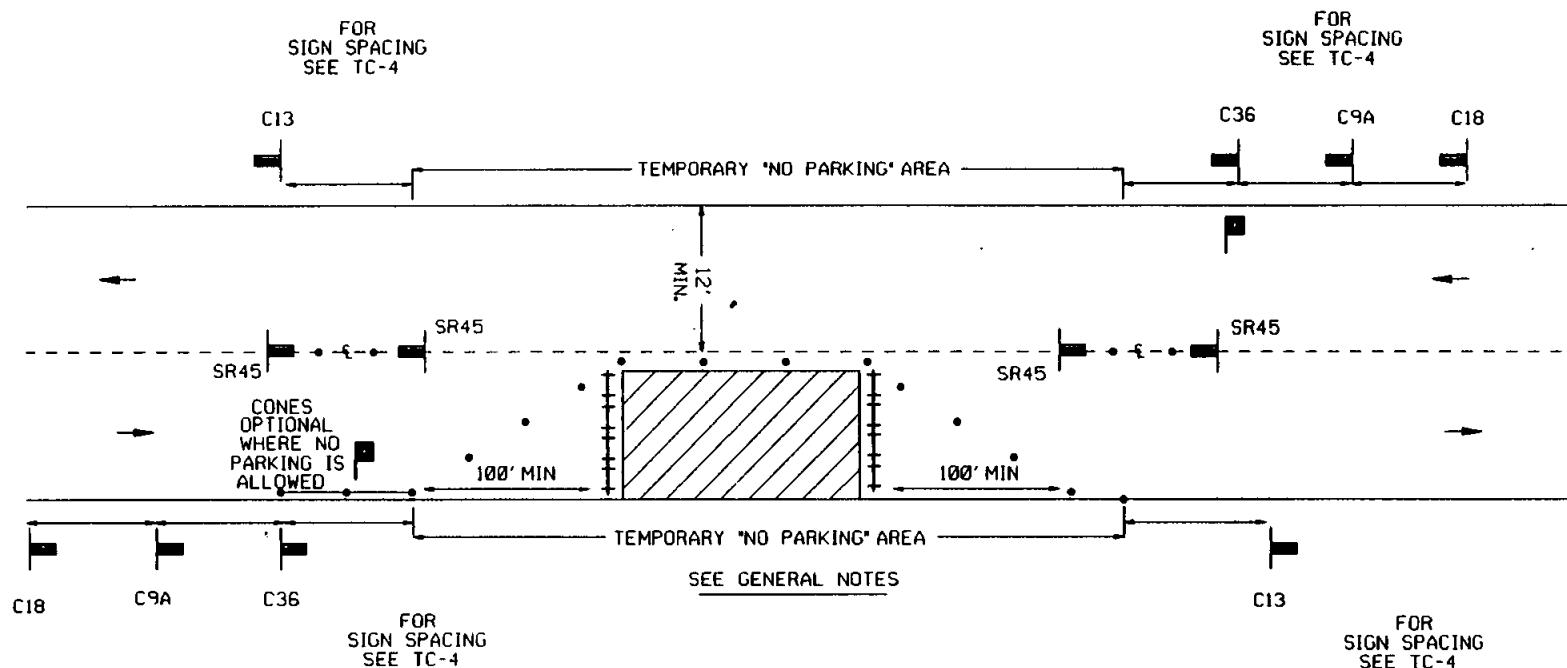
NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

Revision	By	Approved	Date
DRAWING	DMV		4-91
ORIG.	WAT		10-8-91
			8-3-94
			8-25-94
			4-1-95

Revision	By	Approved	Date
DRAWING	DAV		4-91
ORIG.	WAL		8-91
	008		10-8-91
			4-20-94
			9-15-95

SAN DIEGO REGIONAL STANDARD **SIDE OF ROAD WORK AREA** TWO LANE TRAFFIC CONTROL WITH FLAGGERS

APPENDIX "A"



EYE CONTACT MUST BE MAINTAINED BETWEEN FLAGGERS OR USE 2-WAY RADIO COMMUNICATION.

FLAGGER - REFER TO CALTRANS MANUAL 5-07.3

LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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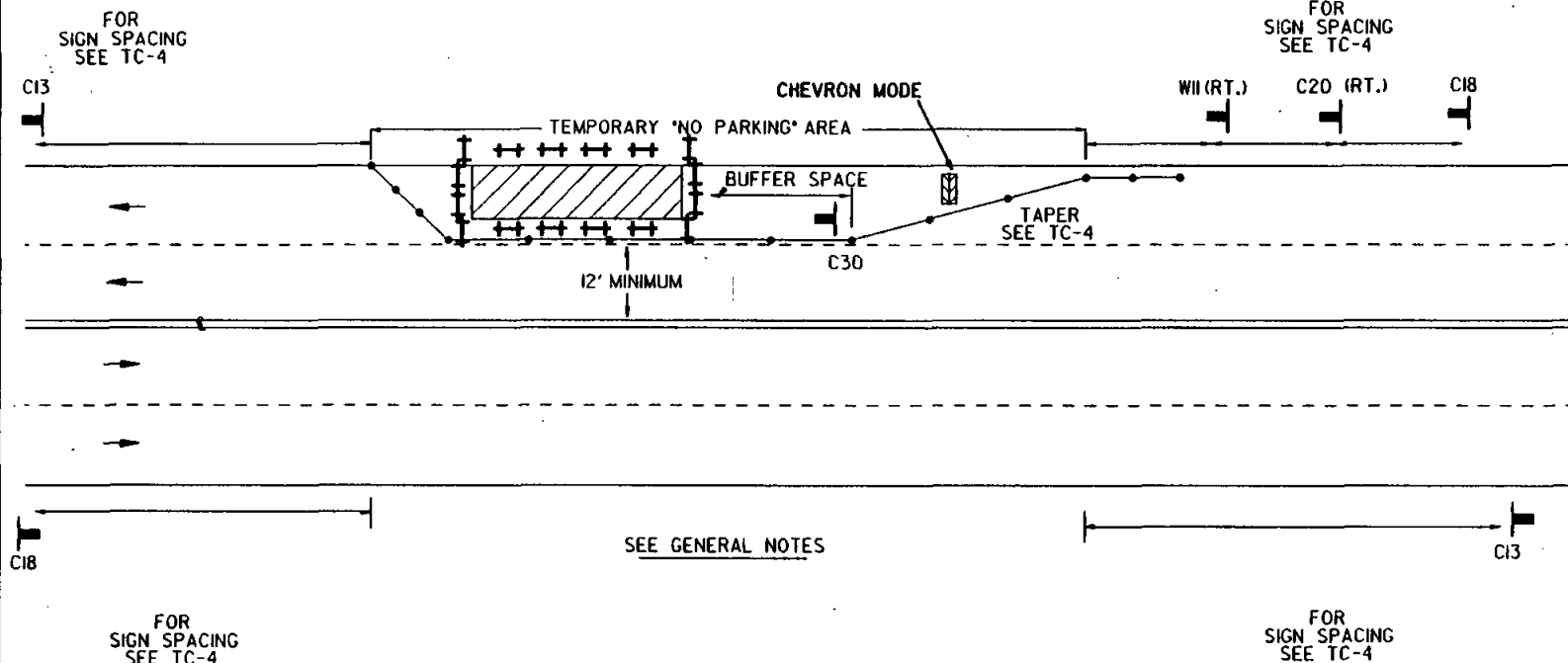
FLAGGER - REFER TO CALTRANS MANUAL 5-07.3

DRAWING NUMBER TC-9

DRAWING
NUMBER TC-10

SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH CENTERLINE
RIGHT TRAFFIC LANE CLOSURE - ONE LANE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ⊕ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

SUBMITTED BY:

NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

Revision By Approved Date

DRAWING DATE

ORIG. DATE

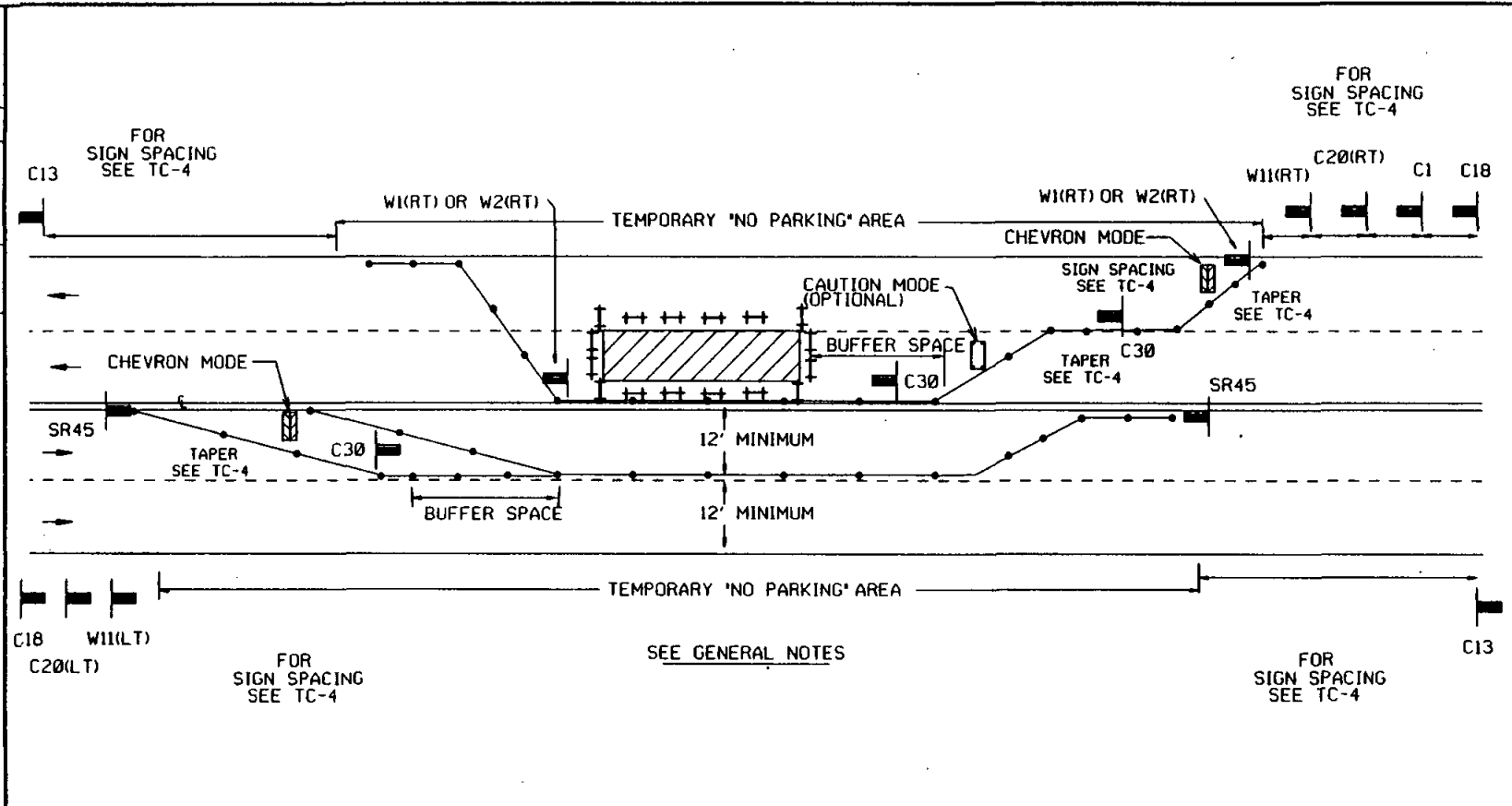
AGENCY USE
APPLICANT USE

Revision	By	Approved	Date
DRAWING	DAY	DAY	8-91
ORIG.	WAI	WAI	10-9-91
	WAI	WAI	11-4-91
	WAI	WAI	1-23-92
	WAI	WAI	9-15-95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH CENTERLINE
RIGHT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING
NUMBER **TC-11**



LEGEND				
• CONE	⇄ BARRICADE	■ FLAGGER	□ SIGN	◻ FLASHING ARROW SIGN
			▨ WORK AREA	→ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

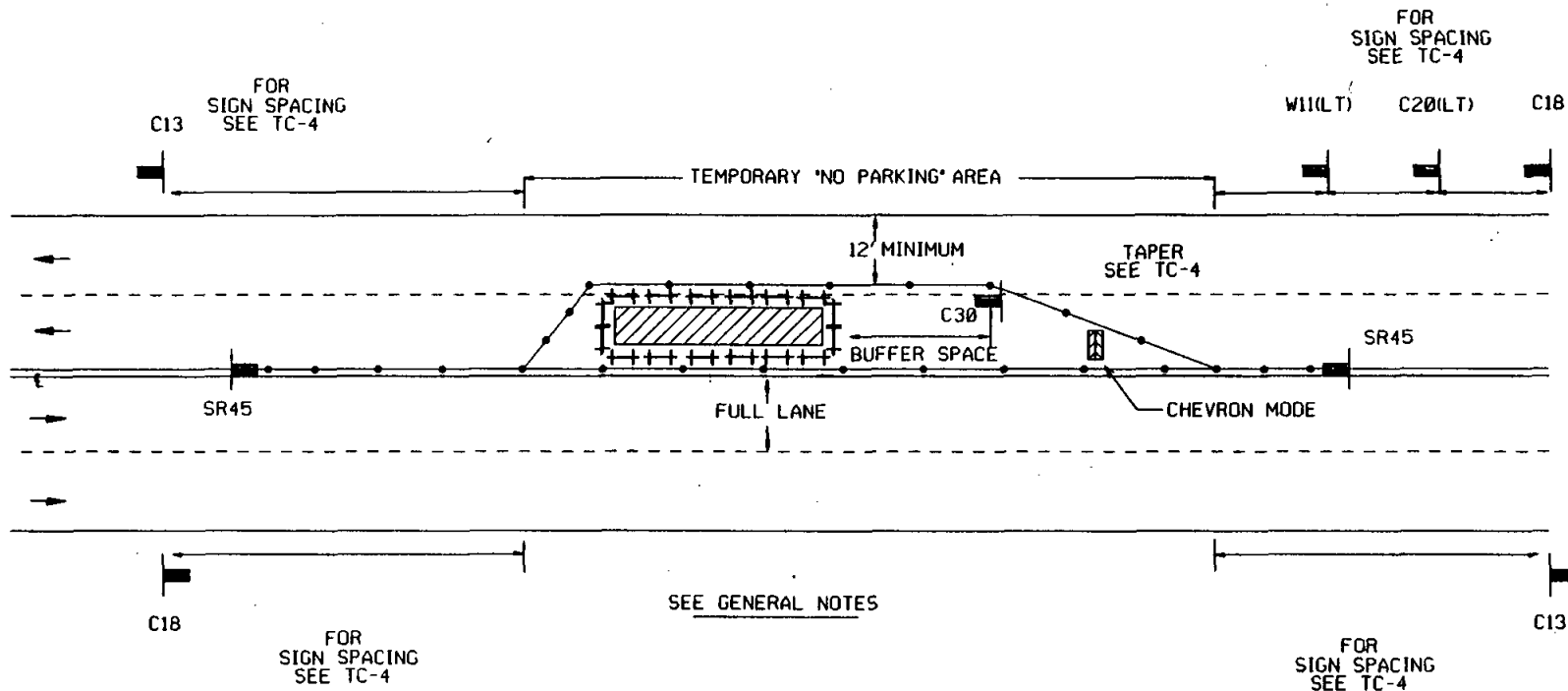
ADDRESS _____

PHONE _____

DRAWING
NUMBER TC-12

CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH CENTERLINE
LEFT TRAFFIC LANE CLOSURE - ONE LANE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

AGENCY USE

APPLICANT USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

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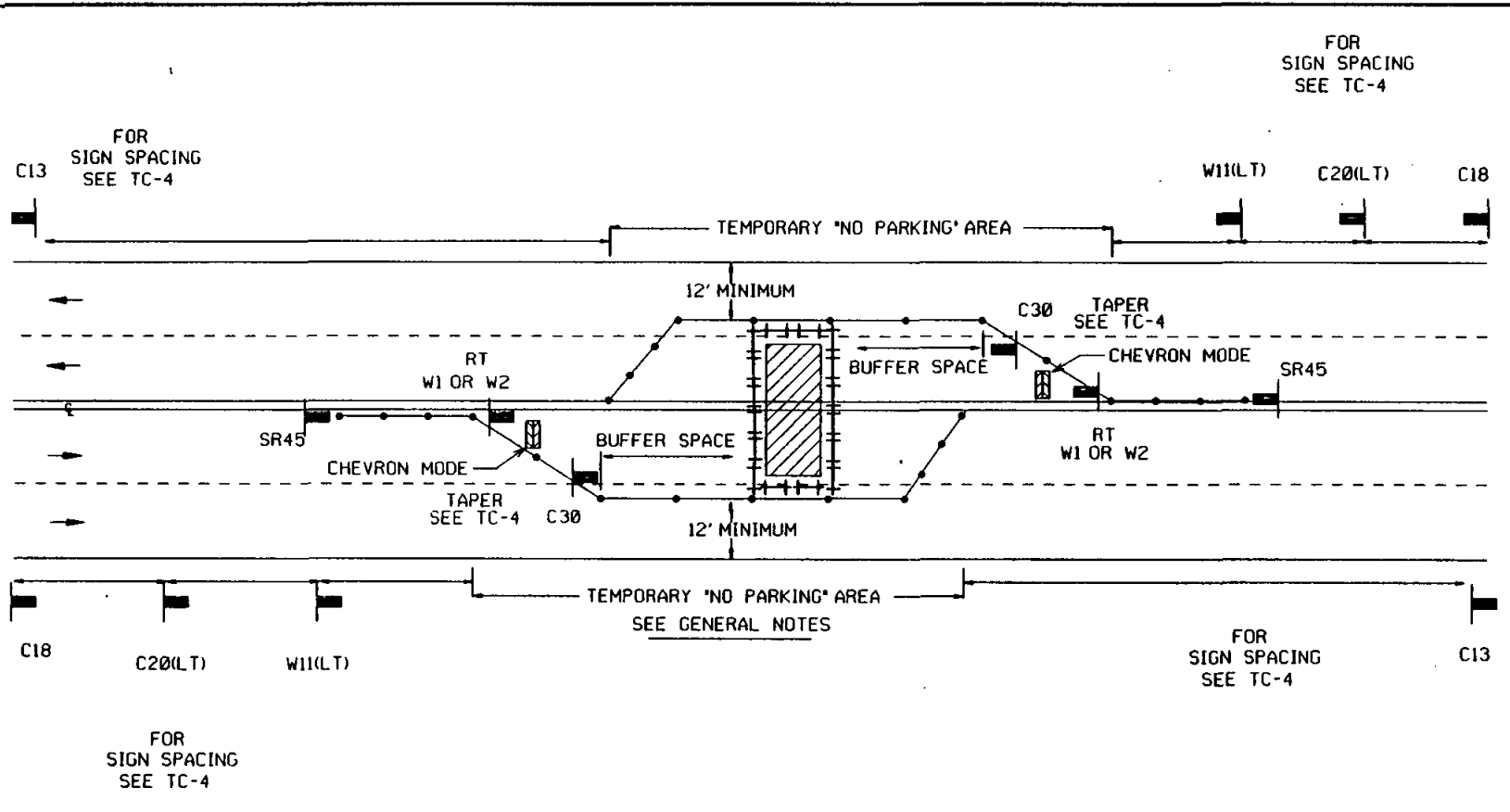
TC-5 is required for all Traffic Control Plans.

Revision	By	Approved	Date
DRAWING	DAY		4-21
DRAWING	DAY		8-21
DRAWING	DAY		10-20
DRAWING	DAY		11-20
DRAWING	DAY		11-20

Revision	By	Approved	Date
DRAWING	DMV		4-91
ORIG.	WAL		8-8-91
	DOB		8-3-94
			4-25-95

APPENDIX "A"
 SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
 MULTILANE TRAFFIC CONTROL WITH CENTERLINE
 LEFT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING
 NUMBER
TC-13



LEGEND							
• CONE	++ BARRICADE	FLAGGER	SIGN	FLASHING ARROW SIGN	WORK AREA	TRAFFIC DIRECTION	

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
 SIGN, CONE
 SPACING AND
 TAPER LENGTH

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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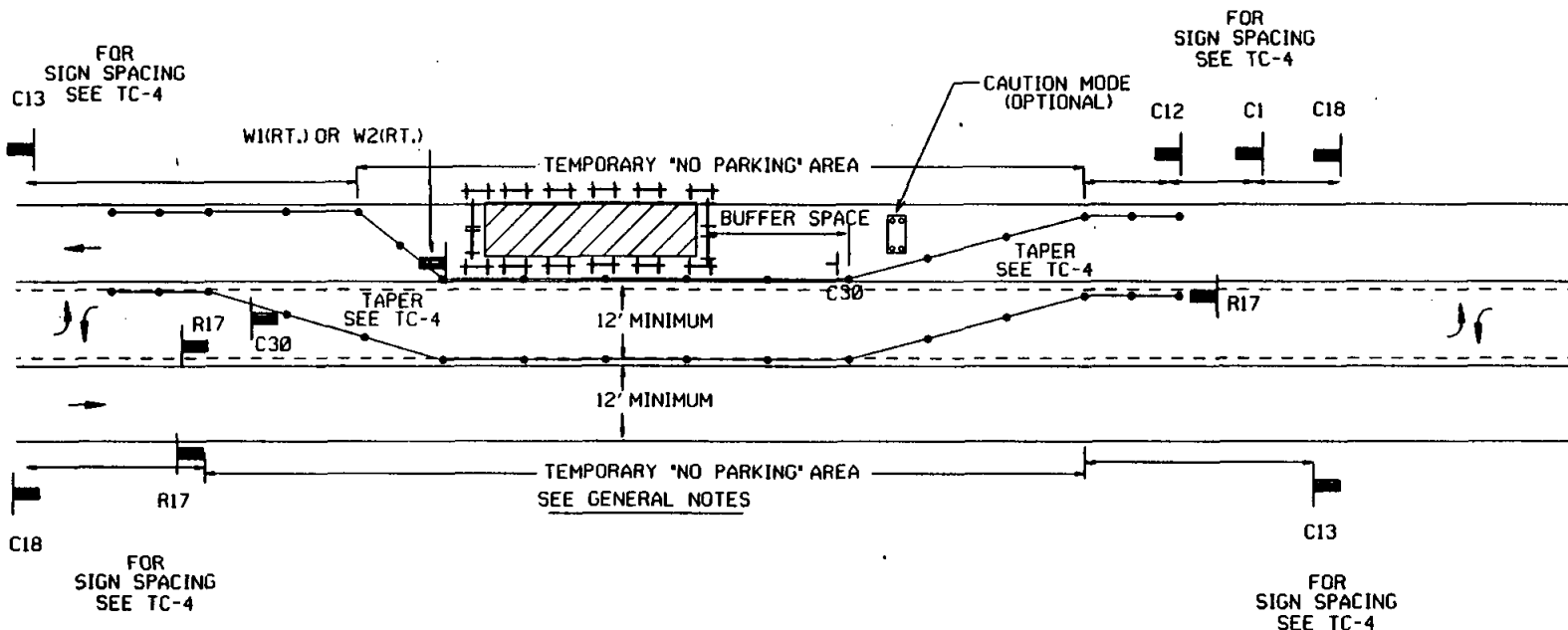
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TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-14

SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN
RIGHT LANE TRAFFIC CLOSURE - ONE LANE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

APPLICANT USE

SUBMITTED BY:

NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

Revision By Approved Date

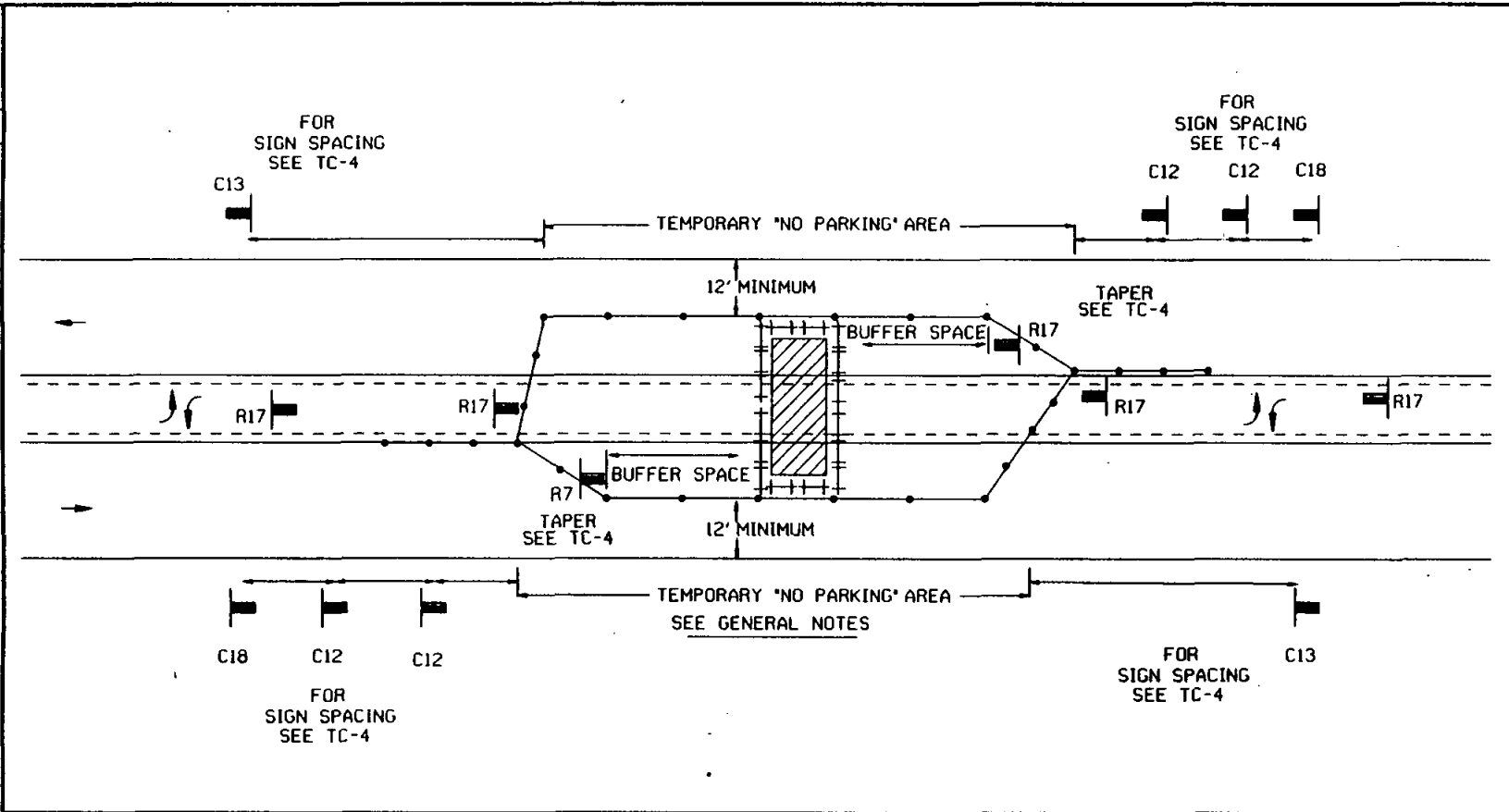
DRAWING ORG. DATE

1008 11-15-91 4-15-92 9-15-94

Revision	By	Approved	Date
DRAWING	DMV		4-91
ORIG.	DMV		8-91
	MAJ		10-8-91
	MAJ		8-30-94
	MAJ		4-25-95
	MAJ		5-18-95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH CENTERLINE
LEFT LANE CLOSURE - ONE LANE

DRAWING
NUMBER
TC-15



LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

SUBMITTED BY:

NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

APPLICANT USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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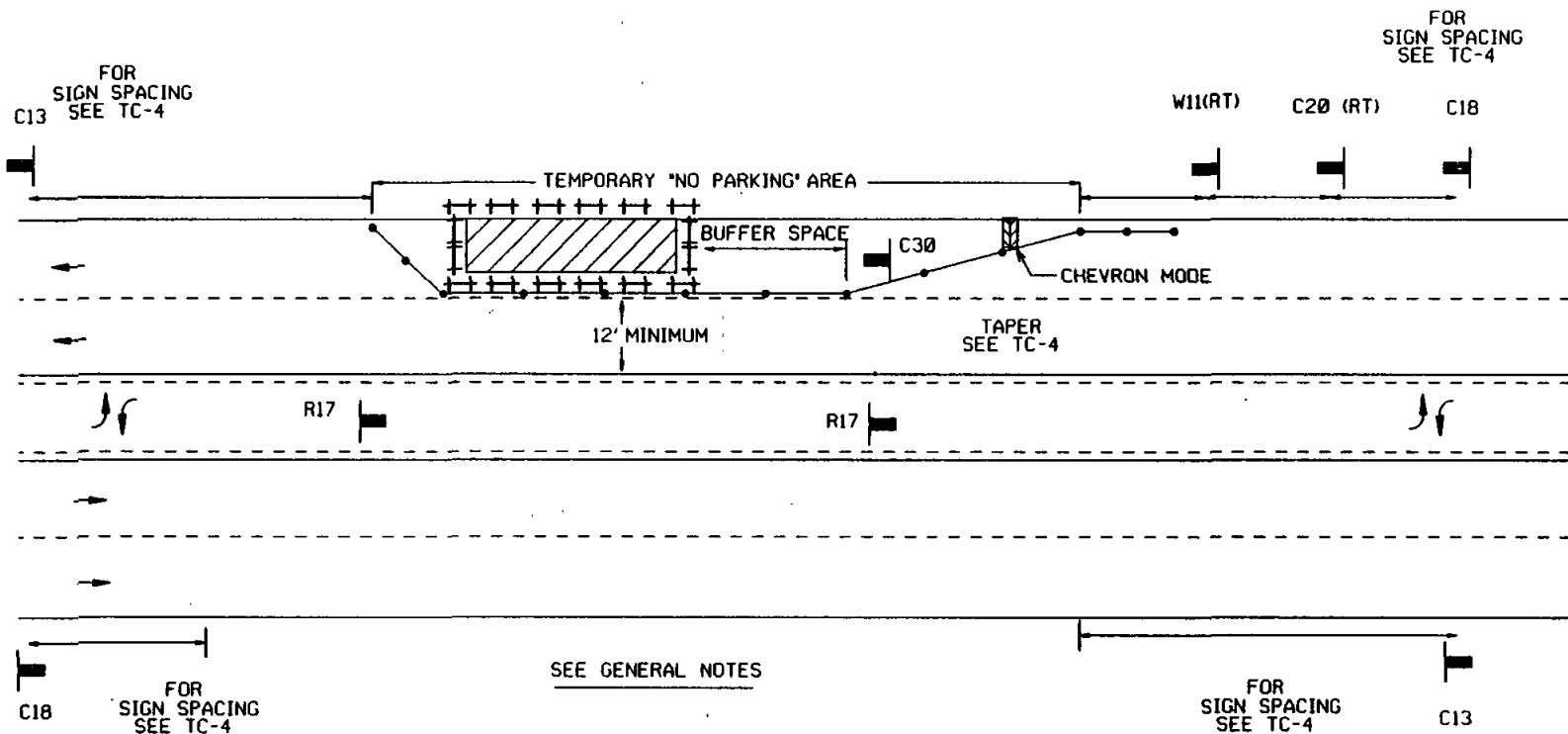
Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-16

SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN
RIGHT TRAFFIC LANE CLOSURE - ONE LANE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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TC-5 is required for all Traffic Control Plans.

APPLICANT USE

SUBMITTED BY:
NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

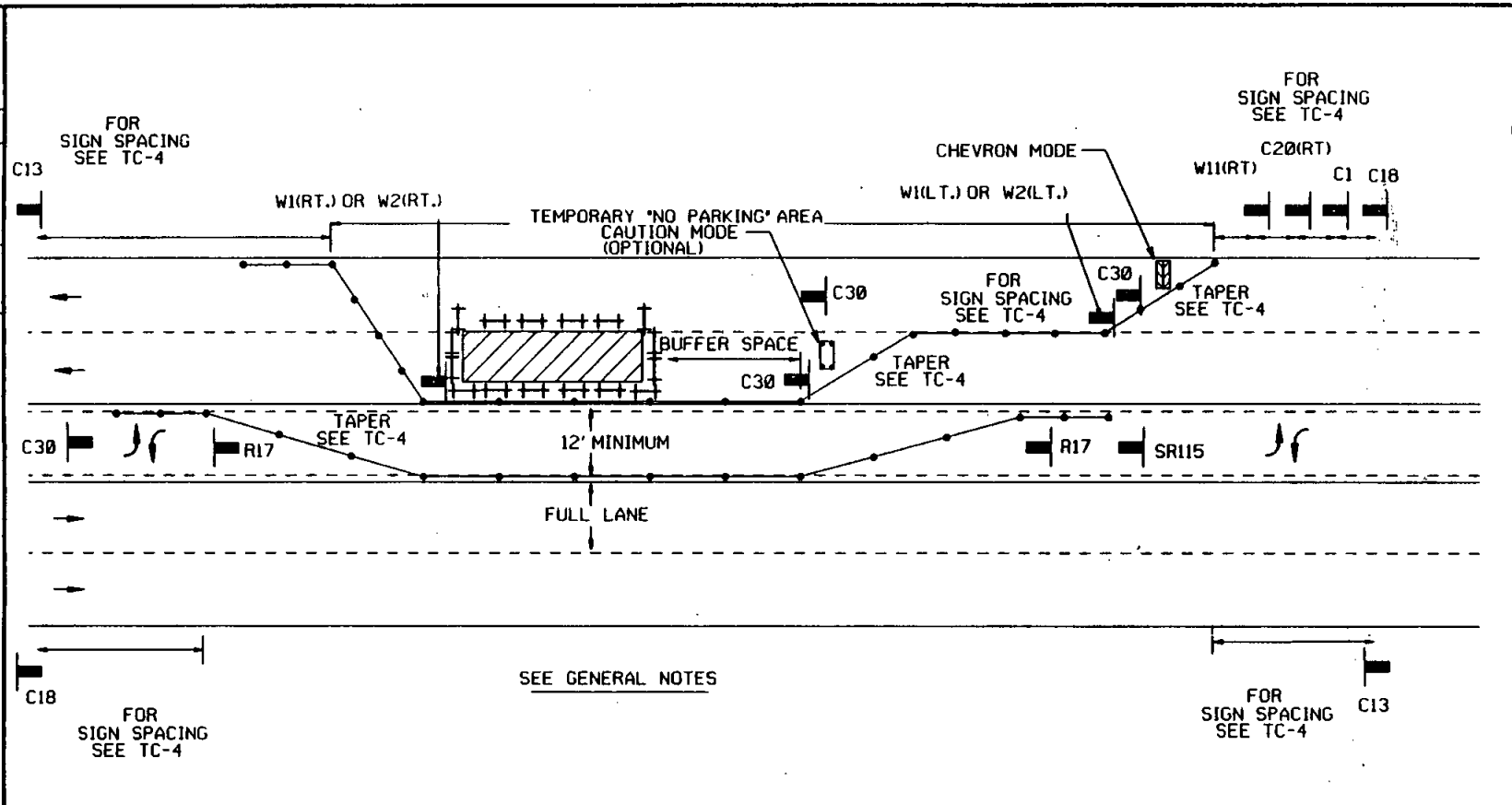
Revision	By	Approved	Date
DRAWING	DRY		
ORIG.			
	WAL		8-21-97
	DGB		9-23-94
			9-15-95

Revision	By	Approved	Date
DRAWING	DMV		4-81
ORIG.	EM		8-91
	WAL		11-81
	COB		9-23-84
			1-21-85
			9-15-95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN
RIGHT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING
NUMBER **TC-17**



LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

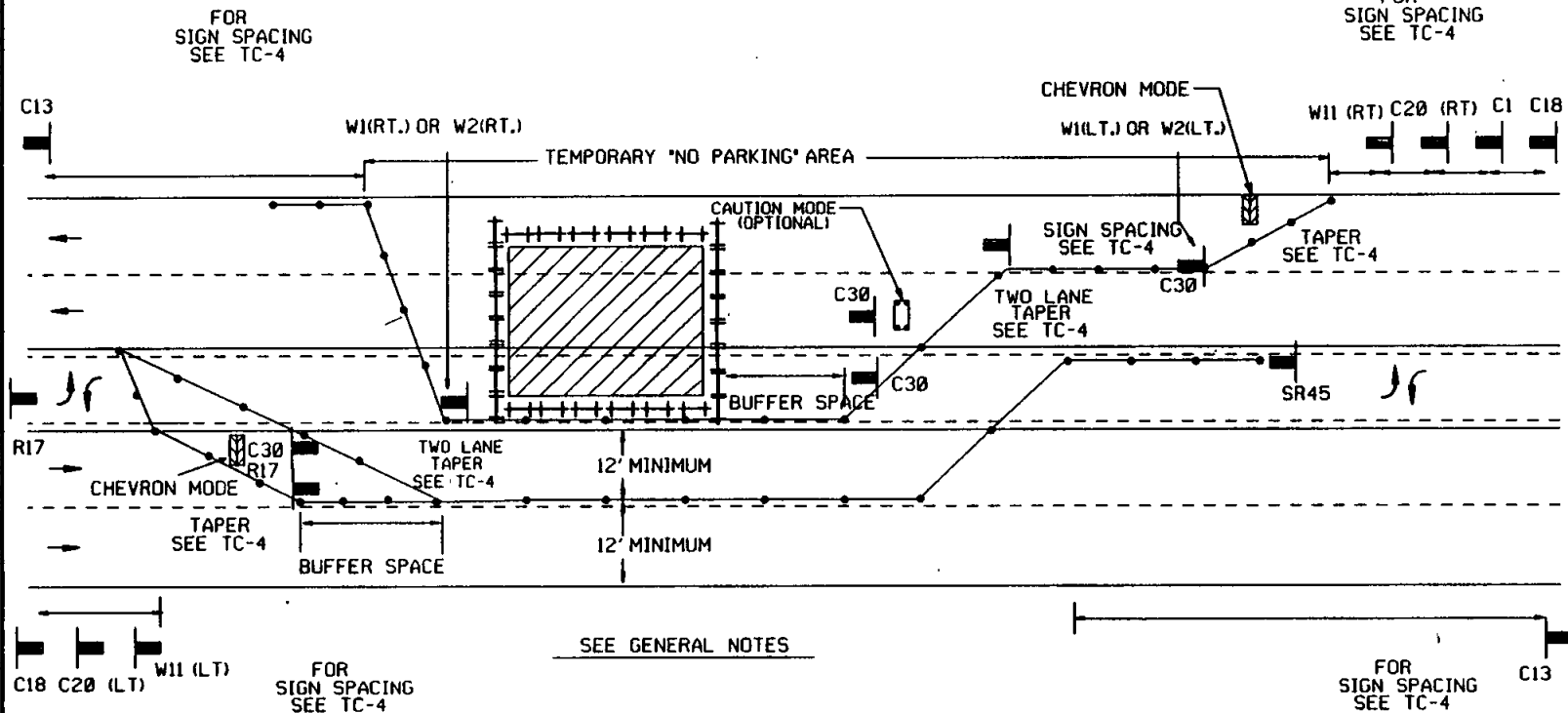
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TC-5 is required for all Traffic Control Plans.

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

DRAWING
NUMBER TC-18SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN
RIGHT TRAFFIC LANE CLOSURE - THREE LANESAPPENDIX "A"
SAN DIEGO REGIONAL STANDARD

LEGEND

• CONE ↕ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA → TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME

COMPANY

ADDRESS

PHONE

AGENCY USE

APPLICANT USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

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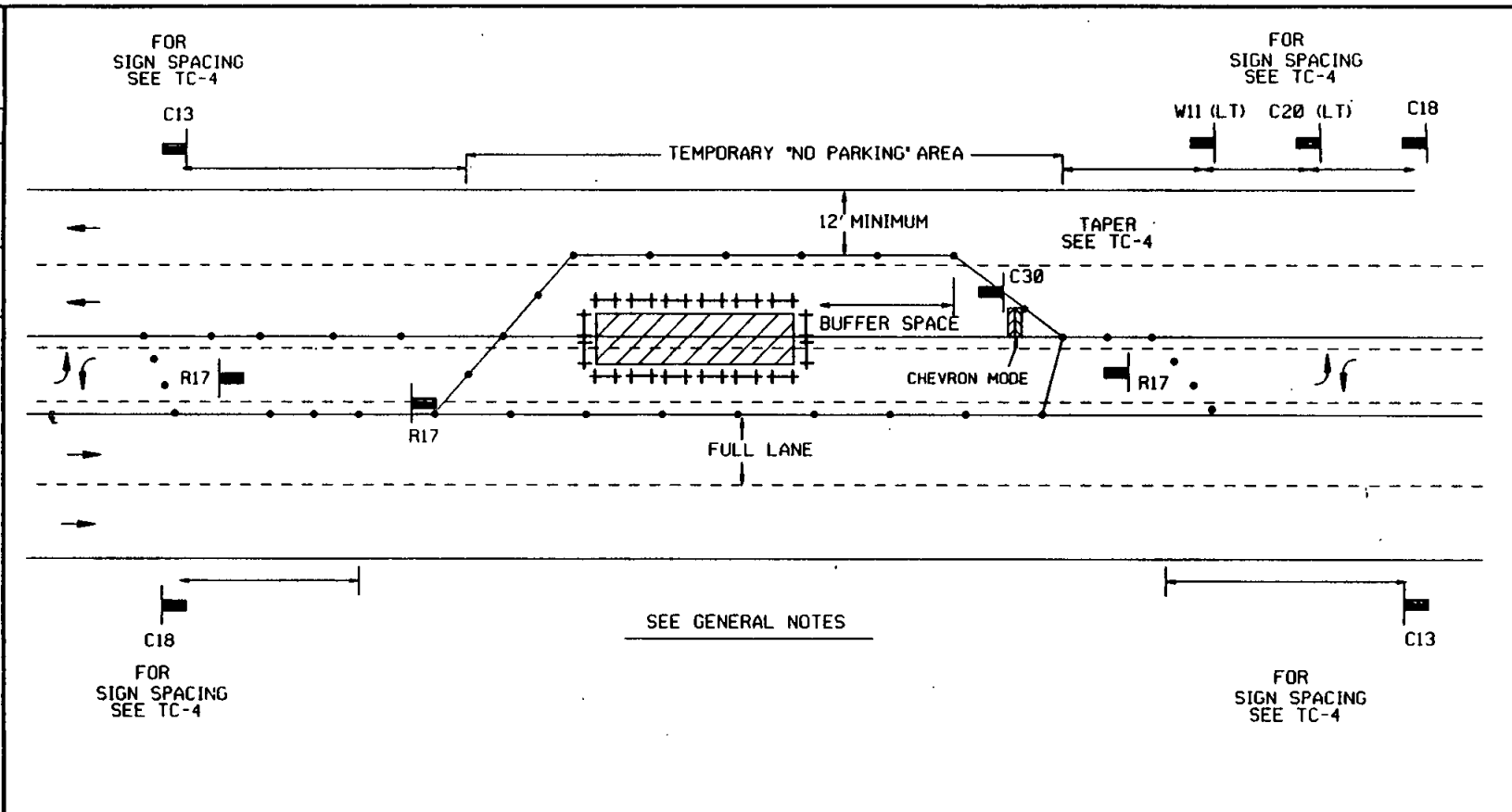
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TC-5 is required for all Traffic Control Plans.

Revision	By	Approved	Date
1	DRG		4-91
2			8-91
3			10-91
4			11-91
5			1-92
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Revision	By	Approved	Date
DRAWING	BY		4-91
ORIG.	VAL		10-25-91
	008		9-15-95



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

APPENDIX "A"

SAN DIEGO REGIONAL STANDARD

CENTER OF ROAD WORK AREA

MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN

LEFT TRAFFIC LANE CLOSURE - TWO LANES

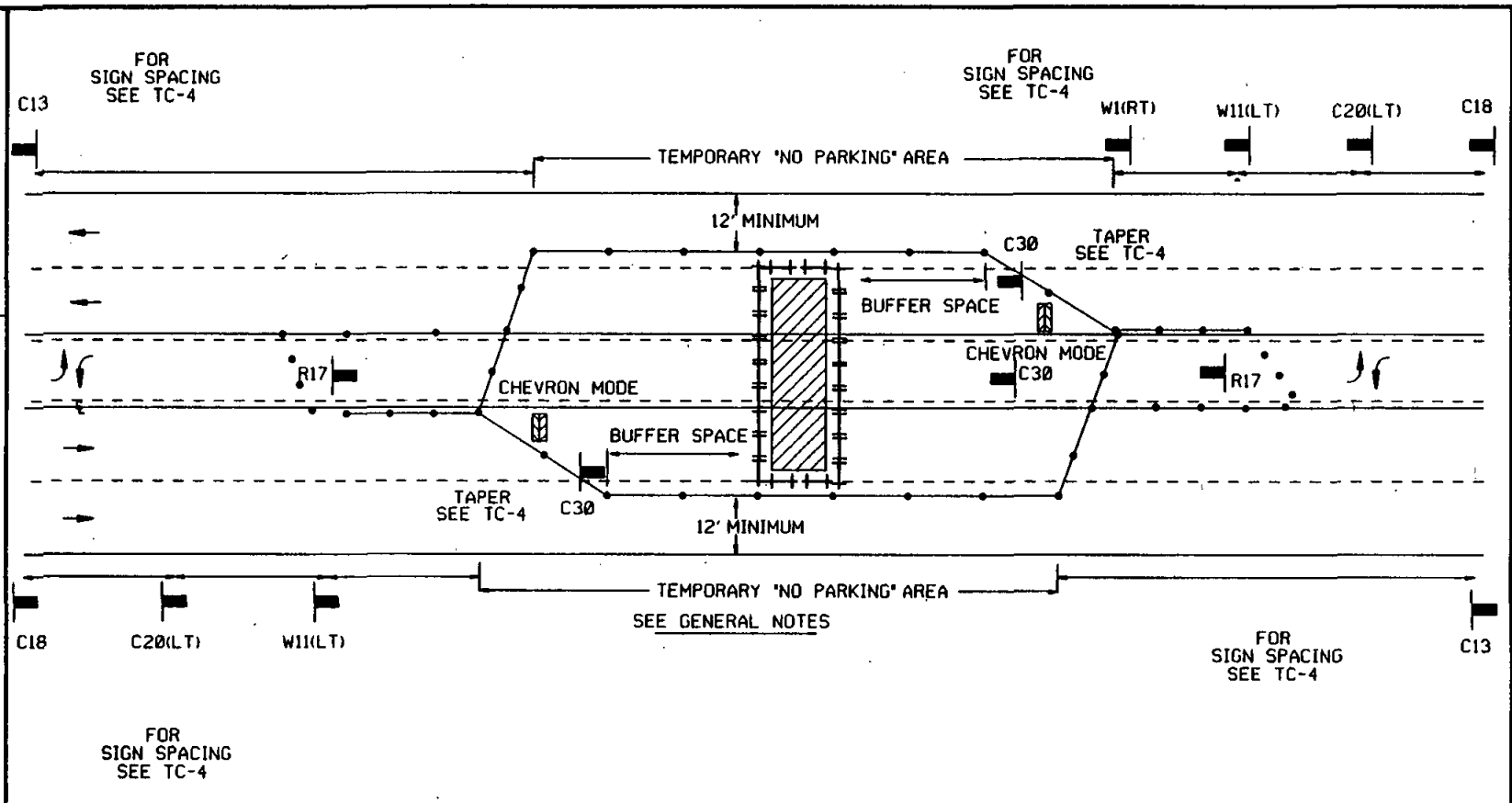
DRAWING
NUMBER
TC-19

TC-20





CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH CENTERLINE
LEFT LANE TRAFFIC LANE CLOSURE - THREE LANES

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

Revision	By	Approved	Date
DRAWING	DAV FHM		4-91 8-91 10-8-91



LEGEND

• CONE  BARRICADE  FLAGGER  SIGN  FLASHING ARROW SIGN  WORK AREA  TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

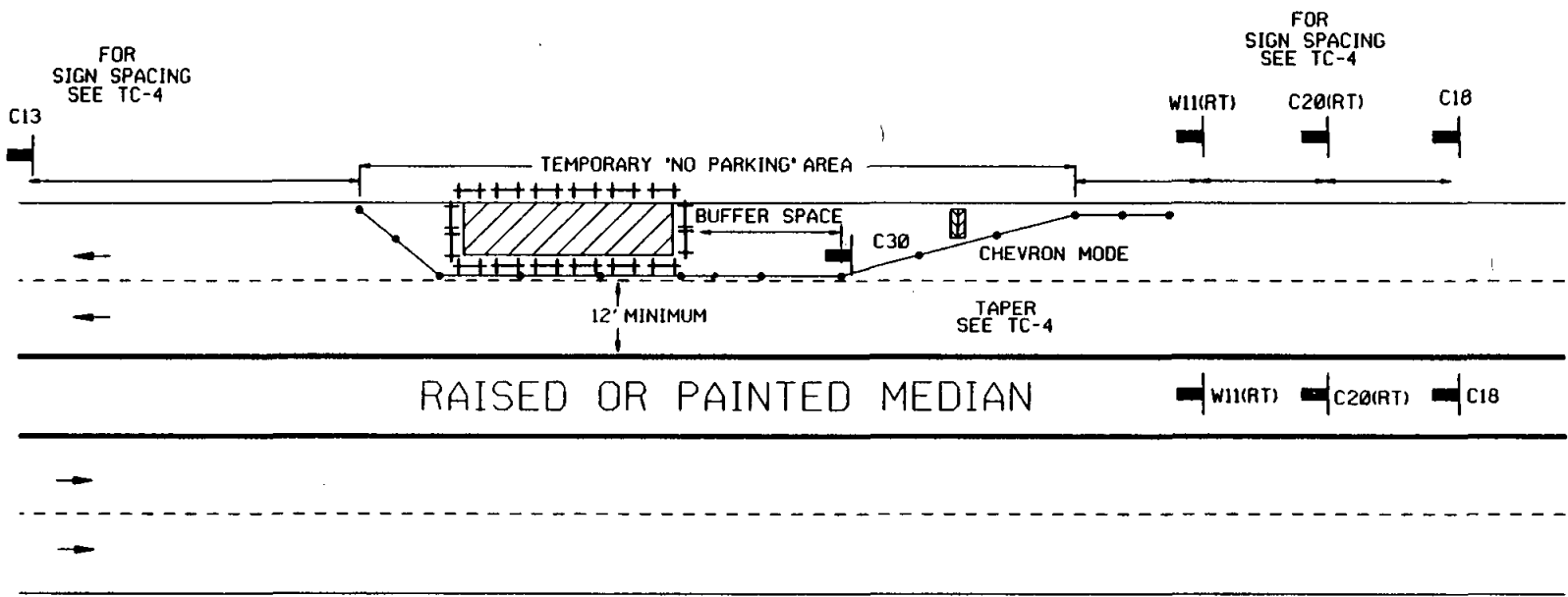
NAME

COMPANY.

ADDRESS

PHONE

Revision	By	Approved	Date
DRAWING	DAW		1-91
DRAWING	DAW		8-91
DRAWING	DAW		10-91
DRAWING	DAW		8-23-94
ORIG.	DAW		5-13-95



SEE GENERAL NOTES

LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

AGENCY USE

APPLICANT USE

APPENDIX "A"

SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA

MULTILANE TRAFFIC CONTROL WITH RAISED MEDIAN

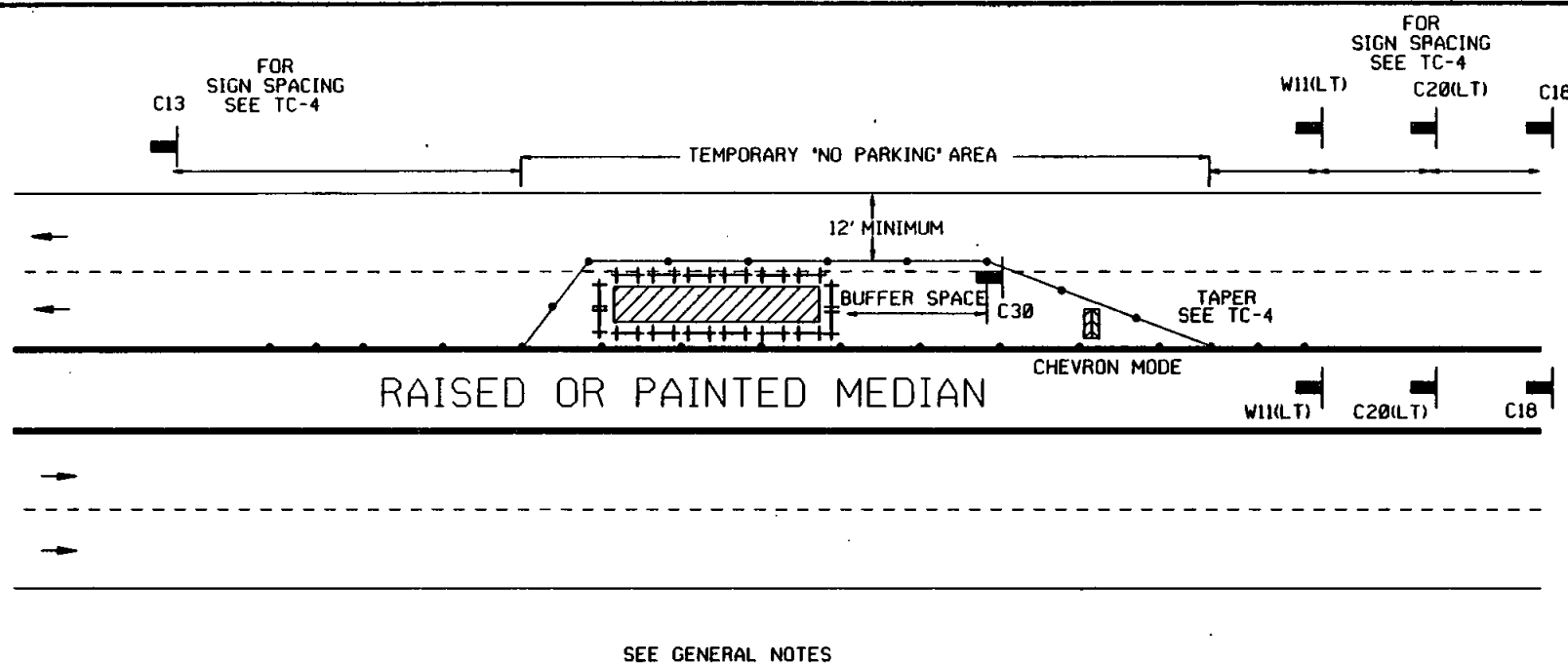
RIGHT TRAFFIC LANE CLOSURE - ONE LANE

DRAWING NUMBER **TC-21**

DRAWING
NUMBER TC-22

CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH RAISED MEDIAN
LEFT TRAFFIC LANE CLOSURE - ONE LANE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



SEE GENERAL NOTES

LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

APPLICANT USE

SUBMITTED BY:

NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

Revision By Approved Date

DRAWING DAY PMH 4-81

ORIG. KAL 10-8-91

DOB 8-23-94

4-23-95

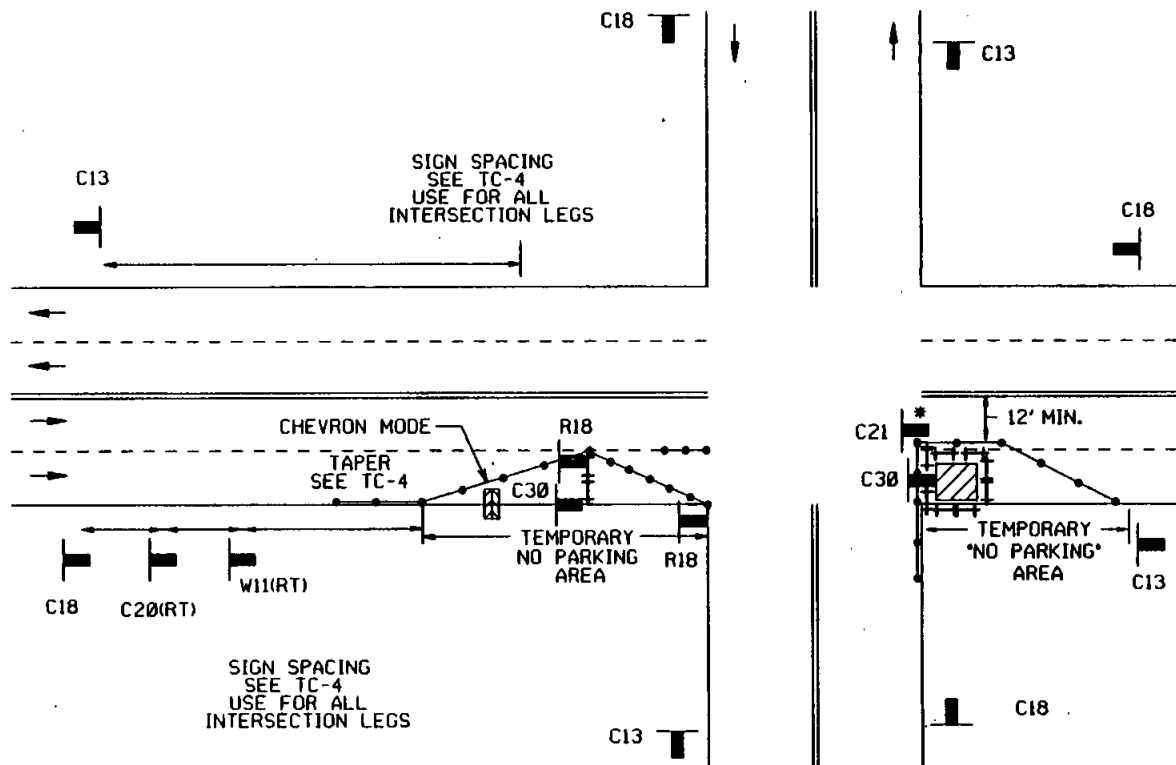
9-15-95

Revision	By	Approved	Date
DRAWING	DMV		4-91
ORIG.	MAI		4-91
	OCB		4-91
			9-13-95

APPENDIX "A" SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER
TC-23



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

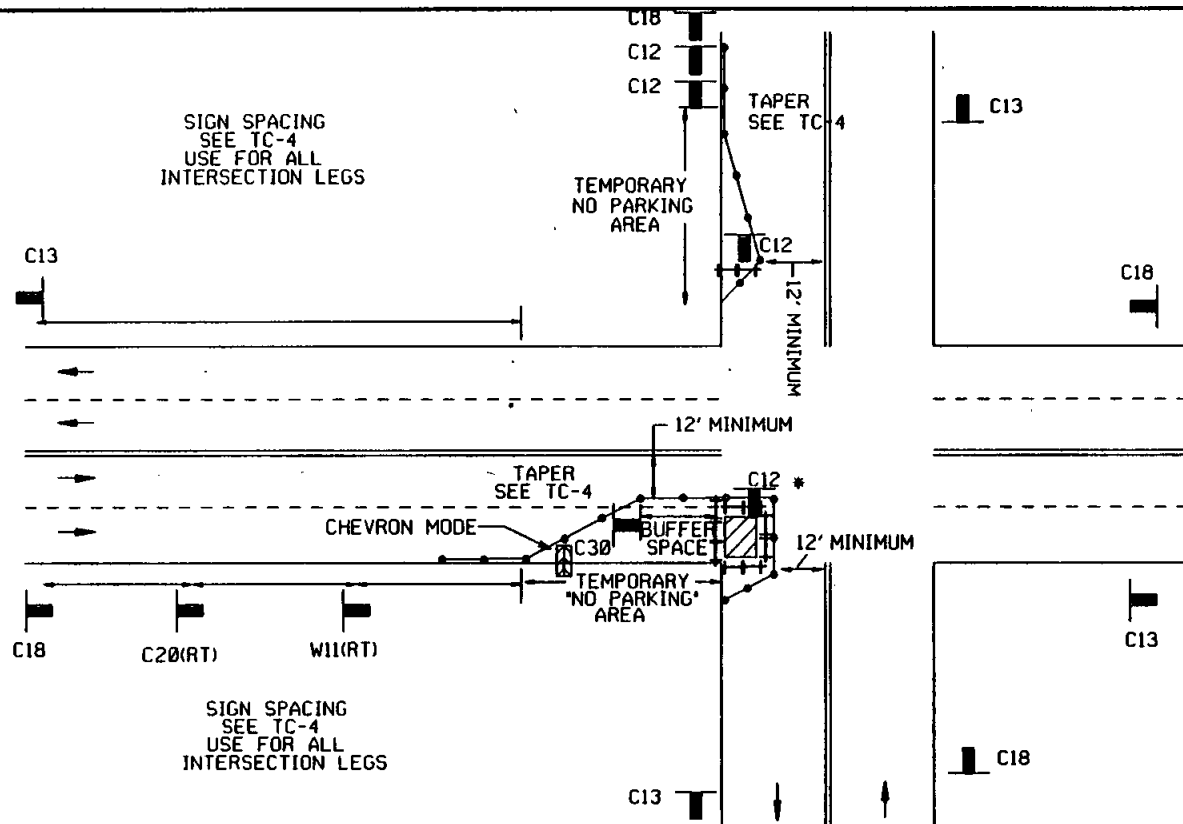
For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-24SIDE OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROLAPPENDIX "A"
SAN DIEGO REGIONAL STANDARD

* RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME

COMPANY

ADDRESS

PHONE

Revision By Approved Date

DRAWING DATE

ORIG. DATE

DATE

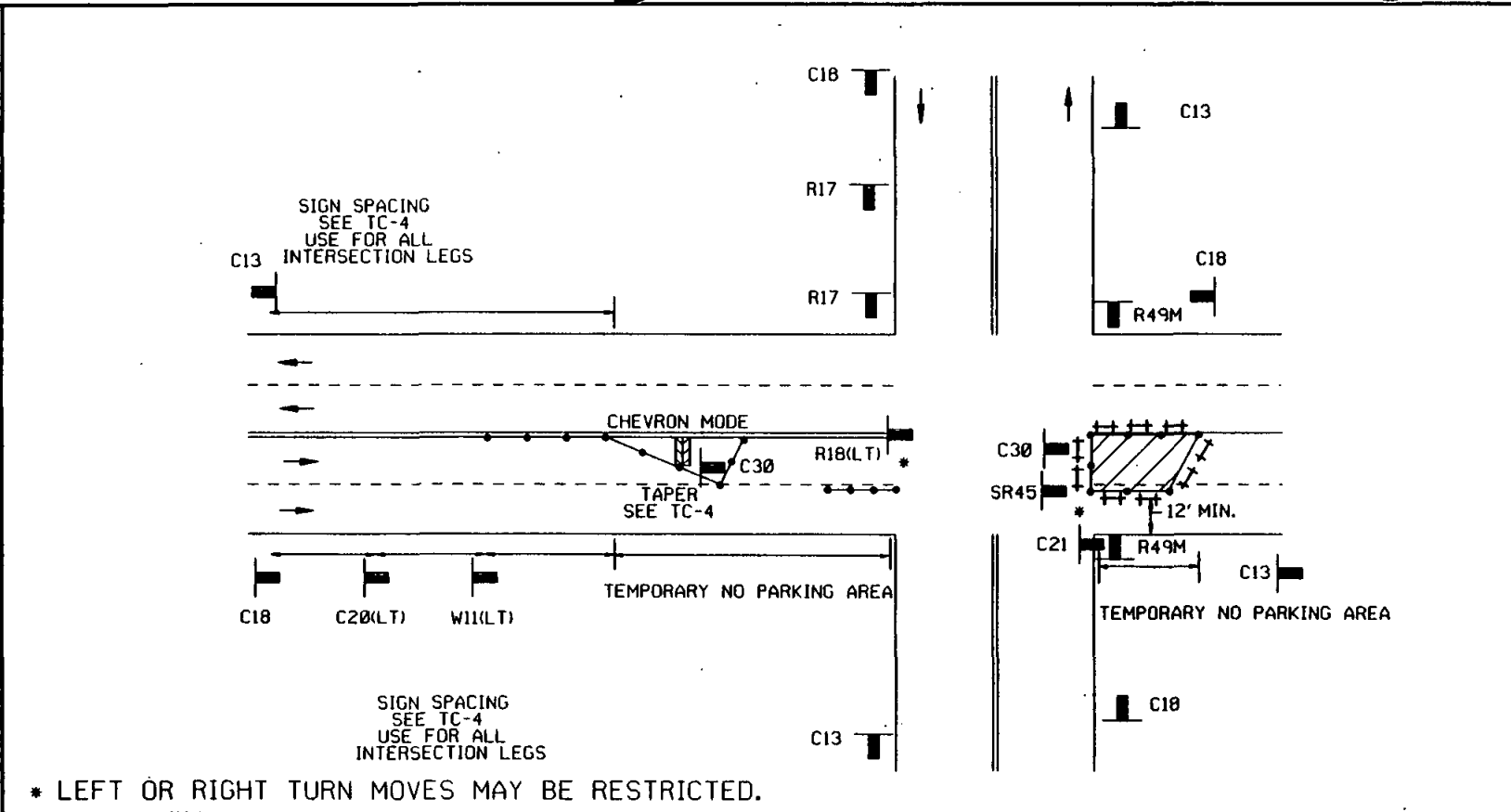
AGENCY USE

APPLICANT USE

Revision	By	Approved	Date
DRAWING	DW		4-91
ORIG.	DM		8-91
	NAJ		1-92
	DCB		4-25-95
			9-15-95

APPENDIX "A" SAN DIEGO REGIONAL STANDARD CENTER OF ROAD WORK AREA INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER
TC-25



LEGEND				
• CONE	++ BARRICADE	FLAGGER	SIGN	FLASHING ARROW SIGN
			WORK AREA	TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

APPLICANT USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

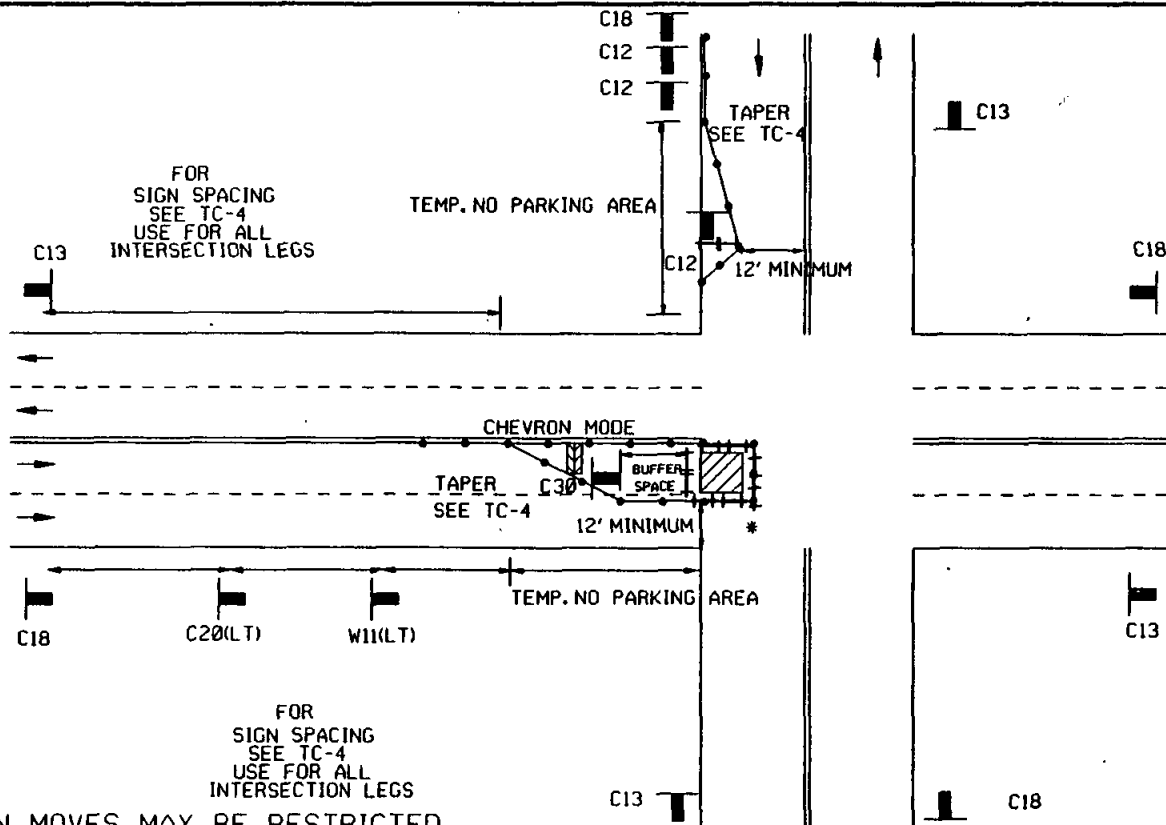
Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



* LEFT TURN MOVES MAY BE RESTRICTED.

LEGEND

• CONE BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying, changing, or adapting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

Revision	By	Approved	Date
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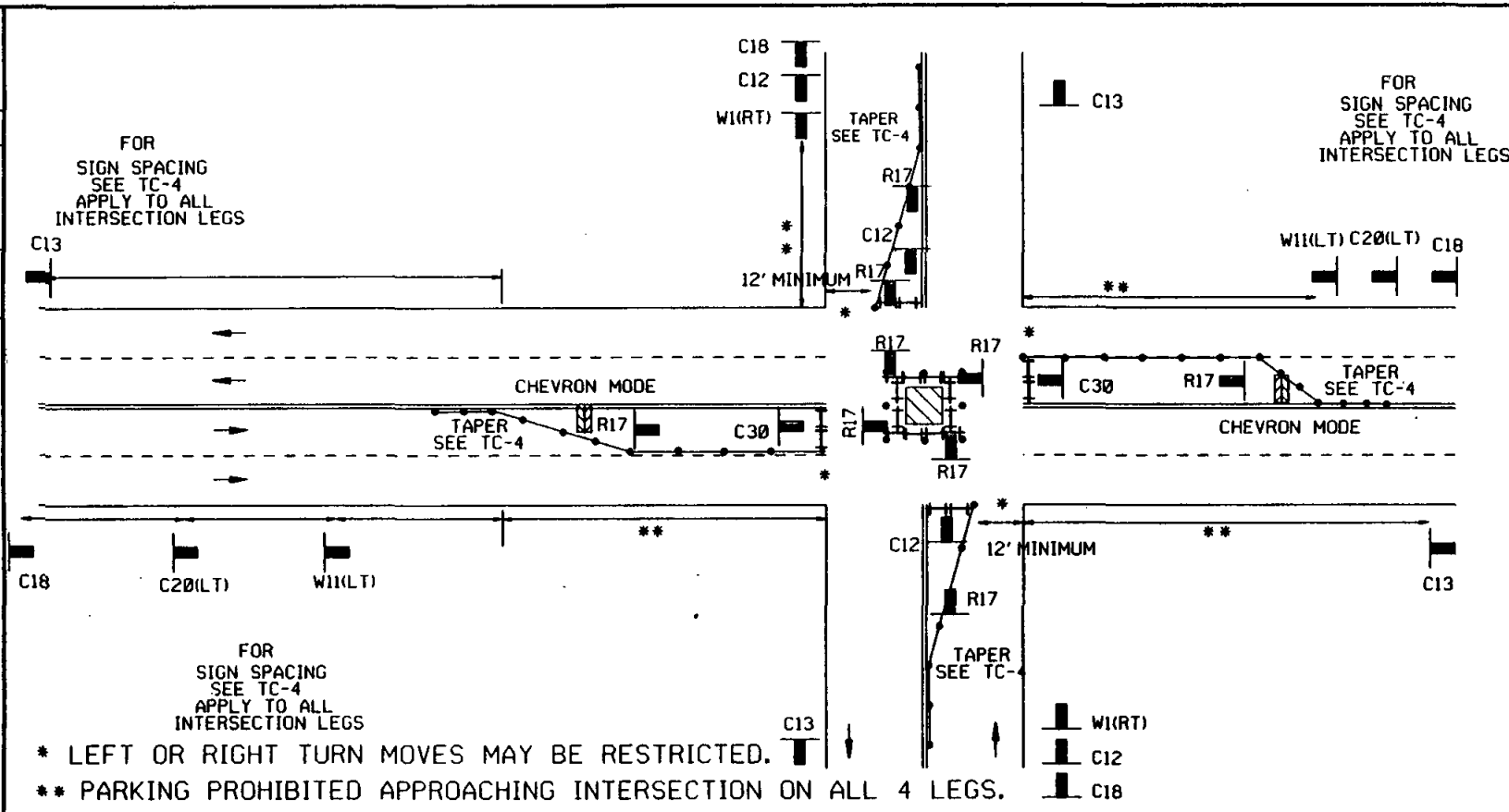
ORIG.

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Revision	By	Approved	Date
DRAWING	DW		
ORIG.	WAT		
	008		
	10-2-91		
	1-23-93		

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER
TC-27



LEGEND

- CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

- For hours of darkness, change cones to vertical barricades with steady burn lights.
- Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.
- This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.
- Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.
- TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

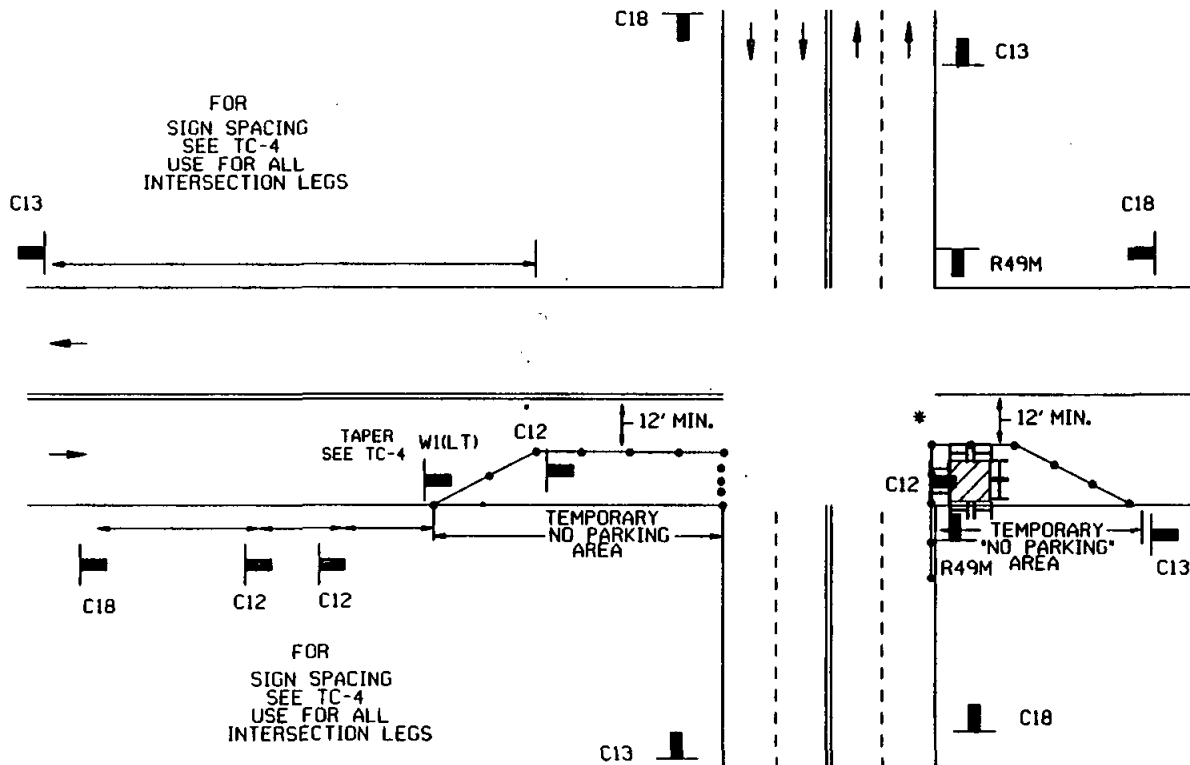
AGENCY USE

APPLICANT USE

DRAWING
NUMBER TC-28

SIDE OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



* RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

• CONE H BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

APPLICANT USE

Revision	By	Date
DRAWING	EDW	4-91
ORIG.	MAJ	10-91
	MAJ	1-92
	MAJ	4-92
	MAJ	1-93
	MAJ	4-93
	MAJ	1-94
	MAJ	4-94
	MAJ	1-95
	MAJ	4-95

DRAWING
NUMBER TC-29



• CONE H BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

SUBMITTED BY:
NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

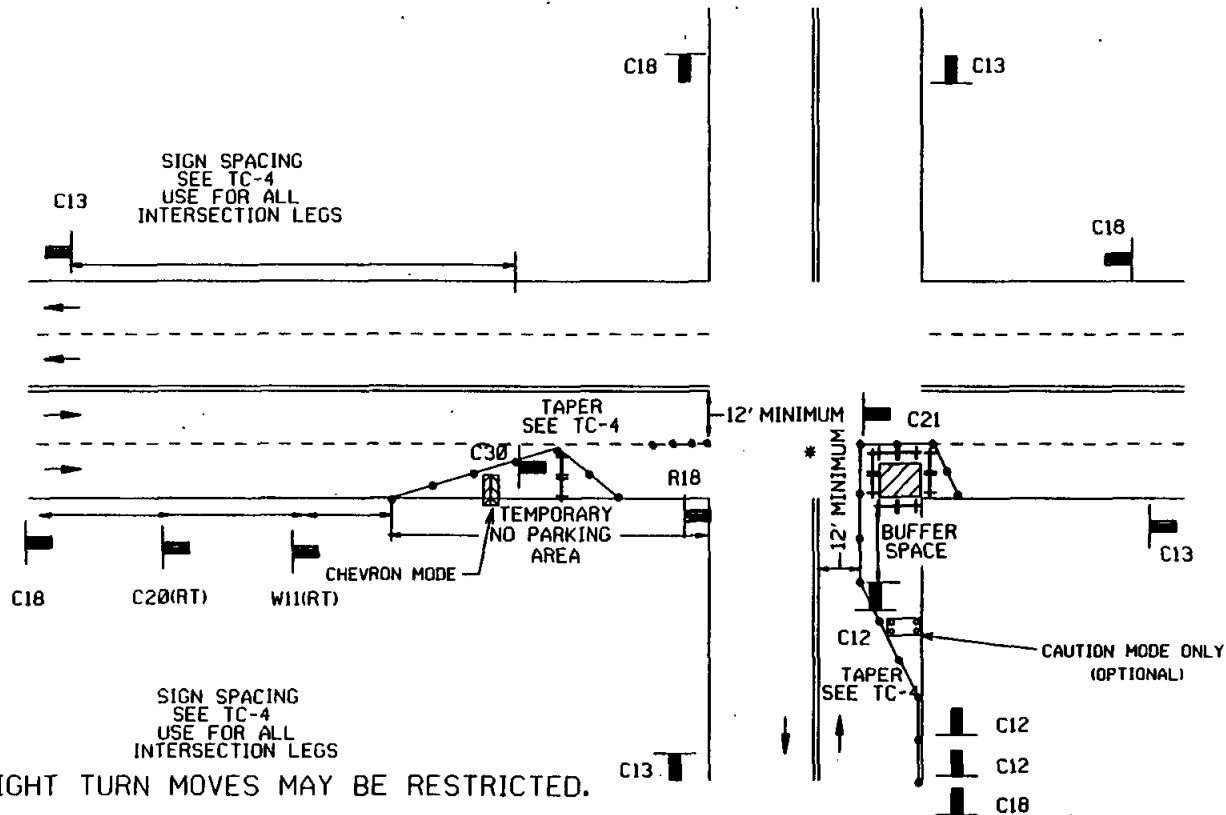
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TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-30

SIDE OF ROAD WORK AREA INTERSECTION TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

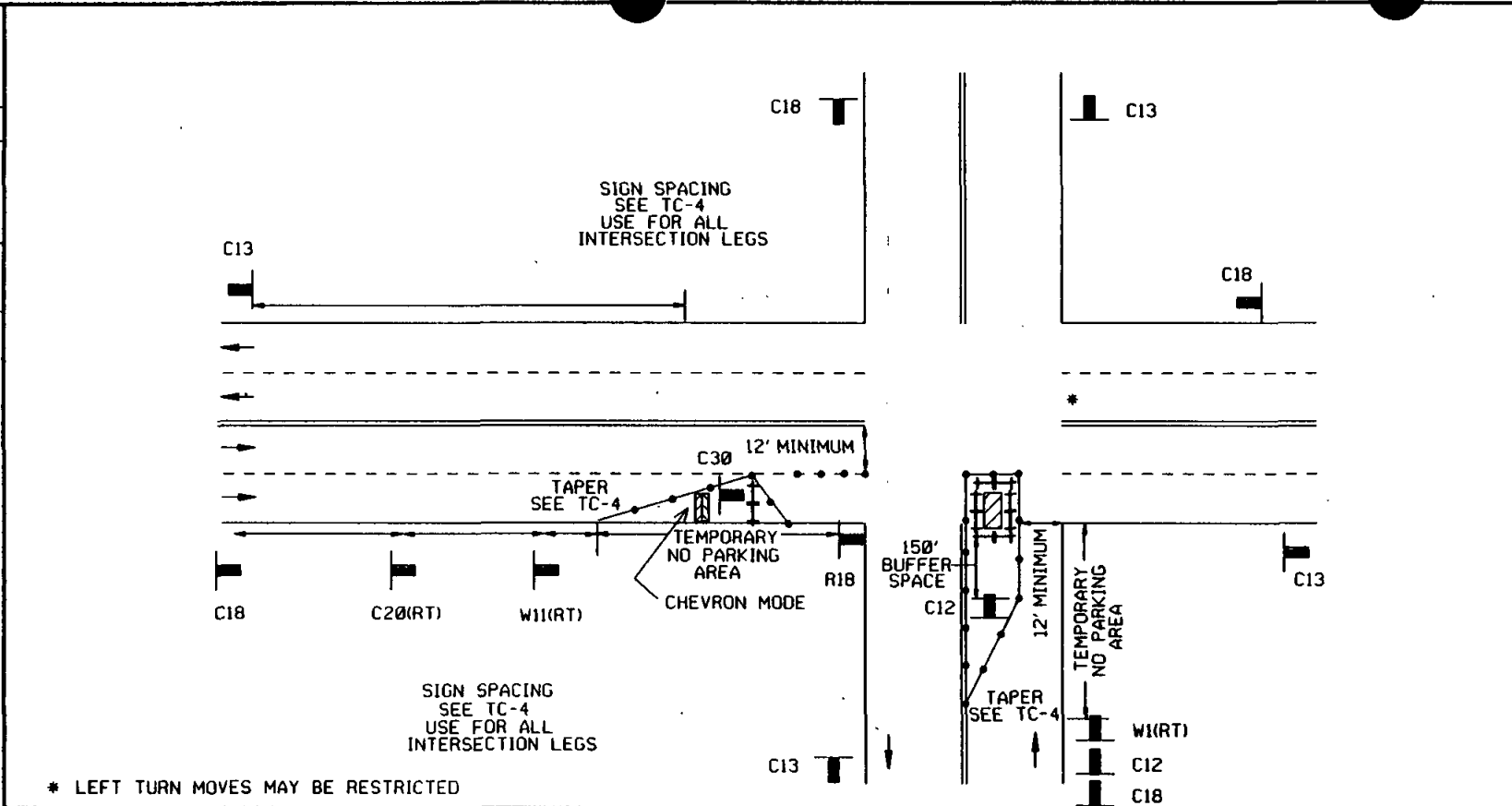
PHONE _____

Revision	By	Approved	Date
DRAWING	DW		1-31
ORIG.	WJ		10-23-91
	DCB		4-25-93

Revision	By	Approved	Date
DRAWING	DDV		4-91
ORIG.	WAL		8-91
	DOB		4-25-96
			9-15-96

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER **TC-31**



LEGEND				
• CONE	++ BARRICADE	FLAGGER	SIGN	FLASHING ARROW SIGN
			WORK AREA	TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-32

SIDE OF ROAD WORK AREA LEFT TURN INTERSECTION TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

Revision
DRAWING
By
Approved
Date

7780
5-31-94
4-25-95
9-15-95

SUBMITTED BY:

NAME

COMPANY

ADDRESS

PHONE

USE TC-12 FOR
TRAFFIC CONTROL
ON THIS LEG

C13

C18

SEE TC-12

C13

C18

C18

C13

SEE TC-4 FOR SIGN SPACING

TAPER CONE ARRANGEMENT
AS MUCH AS SPACE ALLOWS

USE TEMP. STRIPE TAPE
FOR LEFT TURN GUIDE

SR45

C30

C18

C13

C18

* RIGHT TURN MOVES MAY BE RESTRICTED

LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

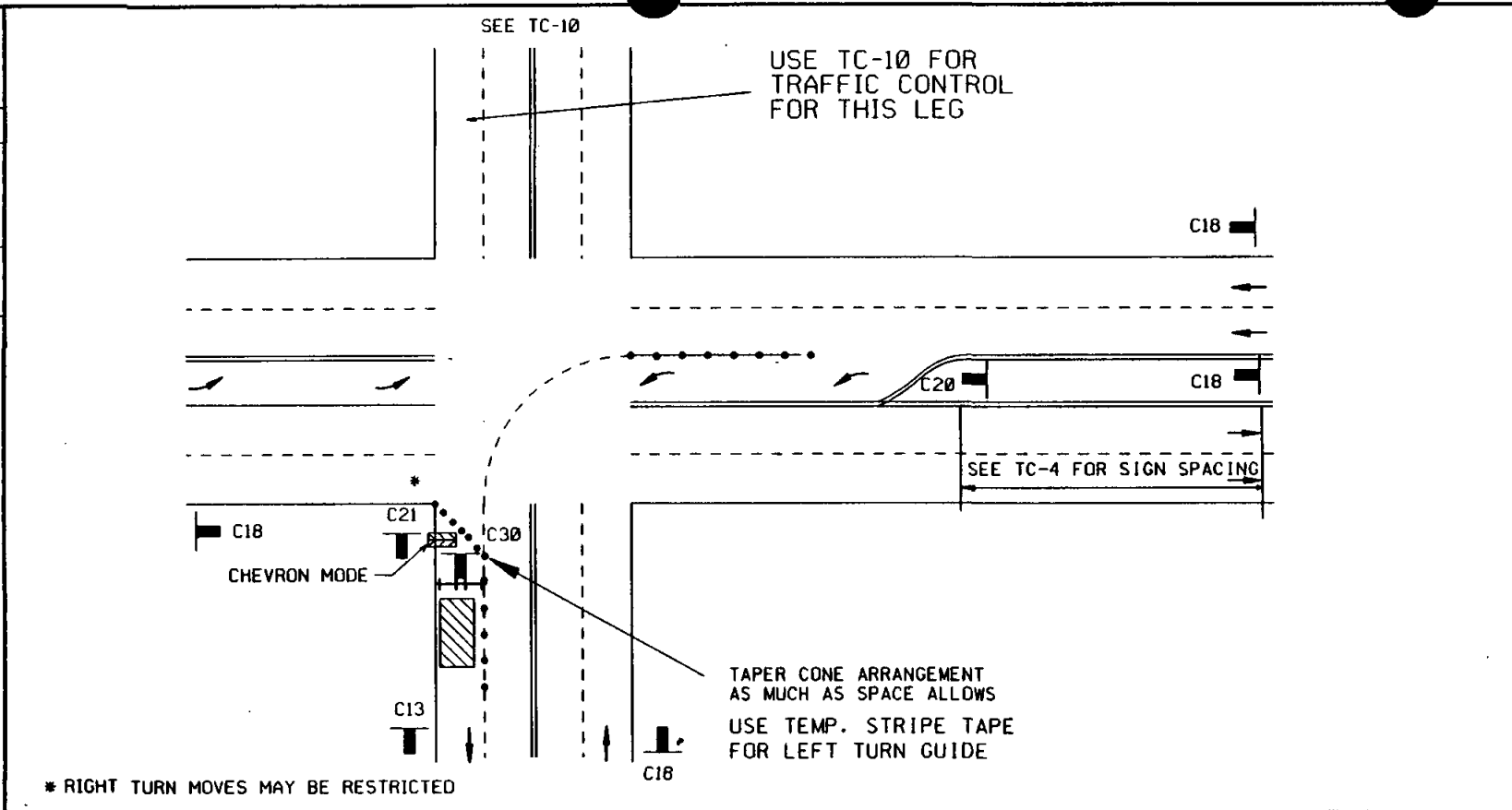
TC-5 is required for all Traffic Control Plans.

APPLICANT USE

Revision	By	Approved	Date
DRAWING	TRD		5-31-94
	WAV		8-28-94
	008		1-23-95
			9-15-95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
SIDE OF ROAD WORK AREA
LEFT TURN INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER
TC-33



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:
NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

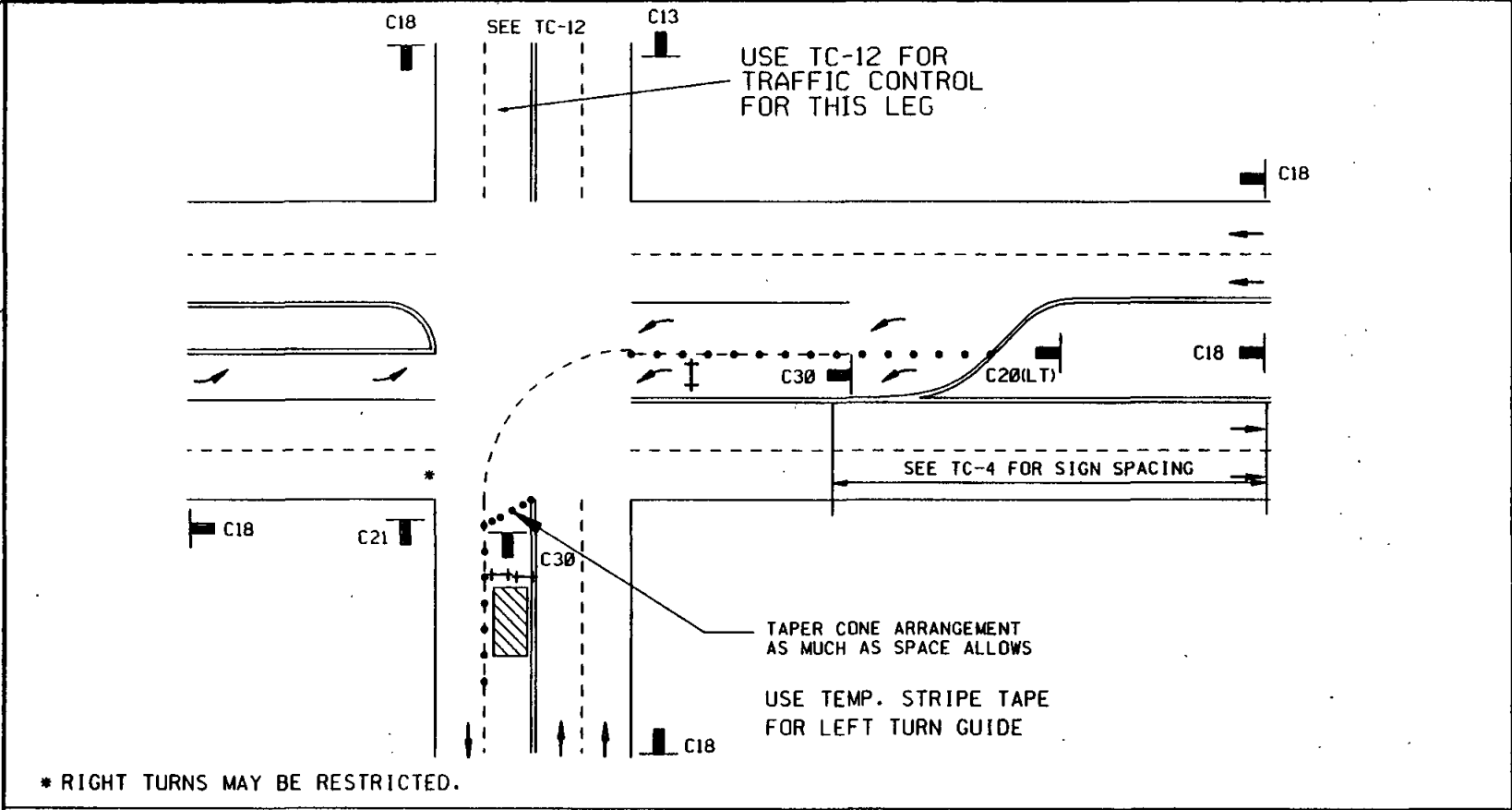
SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

DRAWING
NUMBER

TC-34

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA
LEFT TURN INTERSECTION TRAFFIC CONTROL



LEGEND

- CONE ++ BARRICADE [FLAGGER] FLAGGER [SIGN] SIGN [FLASHING ARROW SIGN] FLASHING ARROW SIGN [WORK AREA] WORK AREA → TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

Revision	By	Date
DRAWING	TRD	9-31-94

VAL 9-28-94

DOB 9-23-95

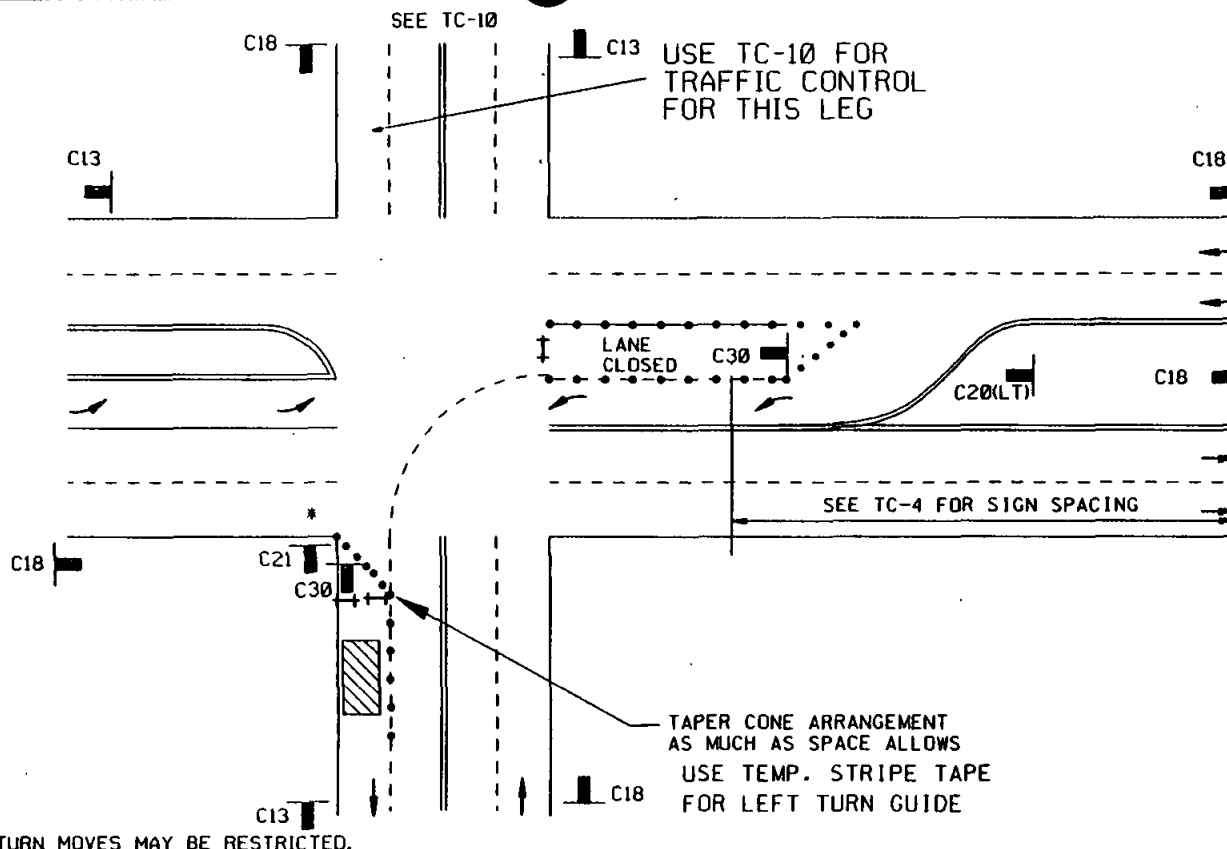
9-15-95

Revision	By	Approved	Date
DRAWING	TND		5-31-94
	WJ		5-26-94
	DB		4-28-95
			9-15-95

APPENDIX "A" SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA LEFT TURN INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER
TC-35



LEGEND

- CONE
- ⊕ BARRICADE
- FLAGGER
- SIGN
- ⚡ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

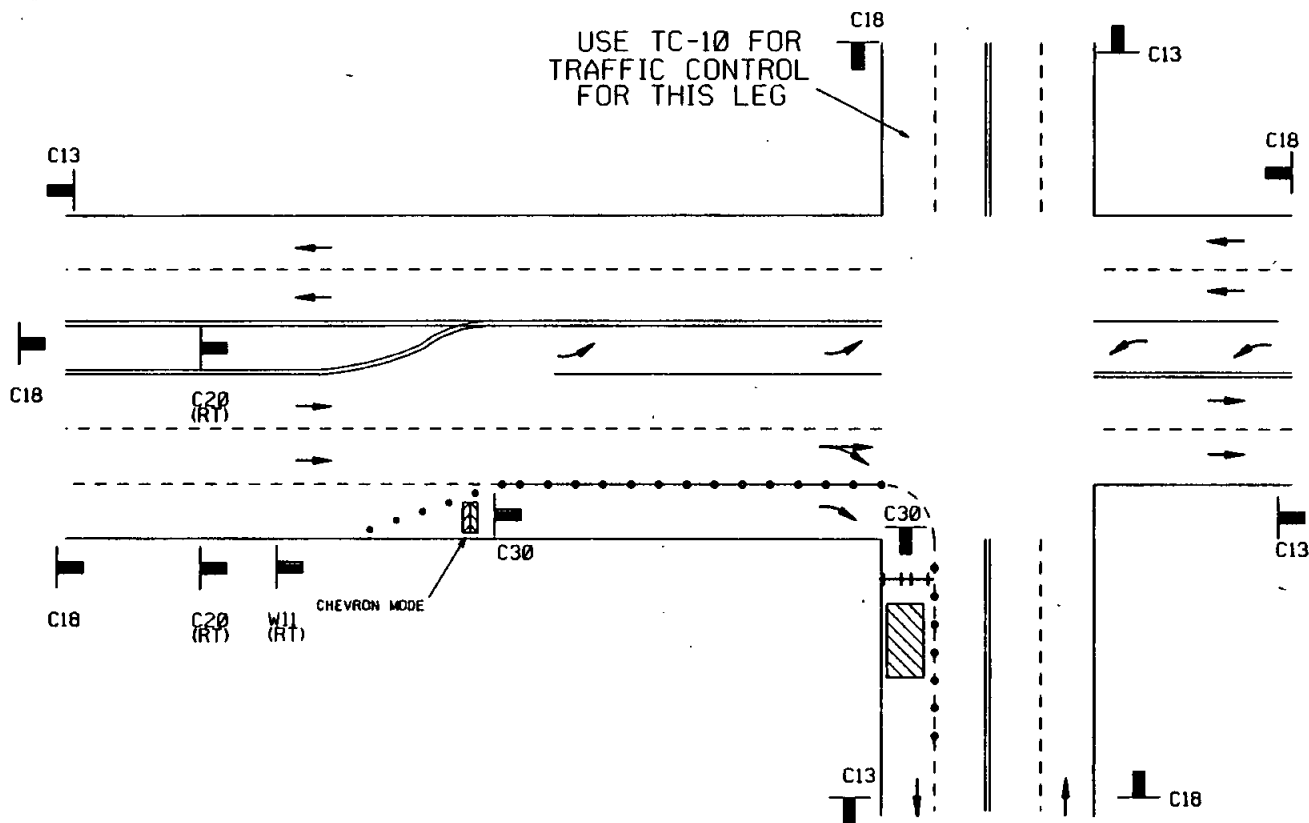
Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

USE TC-10 FOR
TRAFFIC CONTROL
FOR THIS LEG



LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

AGENCY USE

APPLICANT USE

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA

RIGHT TURN INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER TC-36

Revision	By	Approved	Date
DRAWING	TRD		
1	NAJ		5-26-94
2	NAJ		1-25-95
3	OCB		9-15-95

Revision
By
Approved
Date

DRAWING
TNO
WAJ
CDB
1/15/95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA
RIGHT TURN INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER
TC-37

USE TC-12 FOR
TRAFFIC CONTROL
FOR THIS LEG

C18

SEE TC-12

C13

C18

C13

C18

C20(RT)
TURN *

C18

C20(RT)
TURN*

SEE TC-4 FOR
SIGN SPACING

TAPER CONE ARRANGEMENT
AS MUCH AS SPACE ALLOWS

C13

C30

C21

C13

C18

LEFT OR RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME

COMPANY

ADDRESS

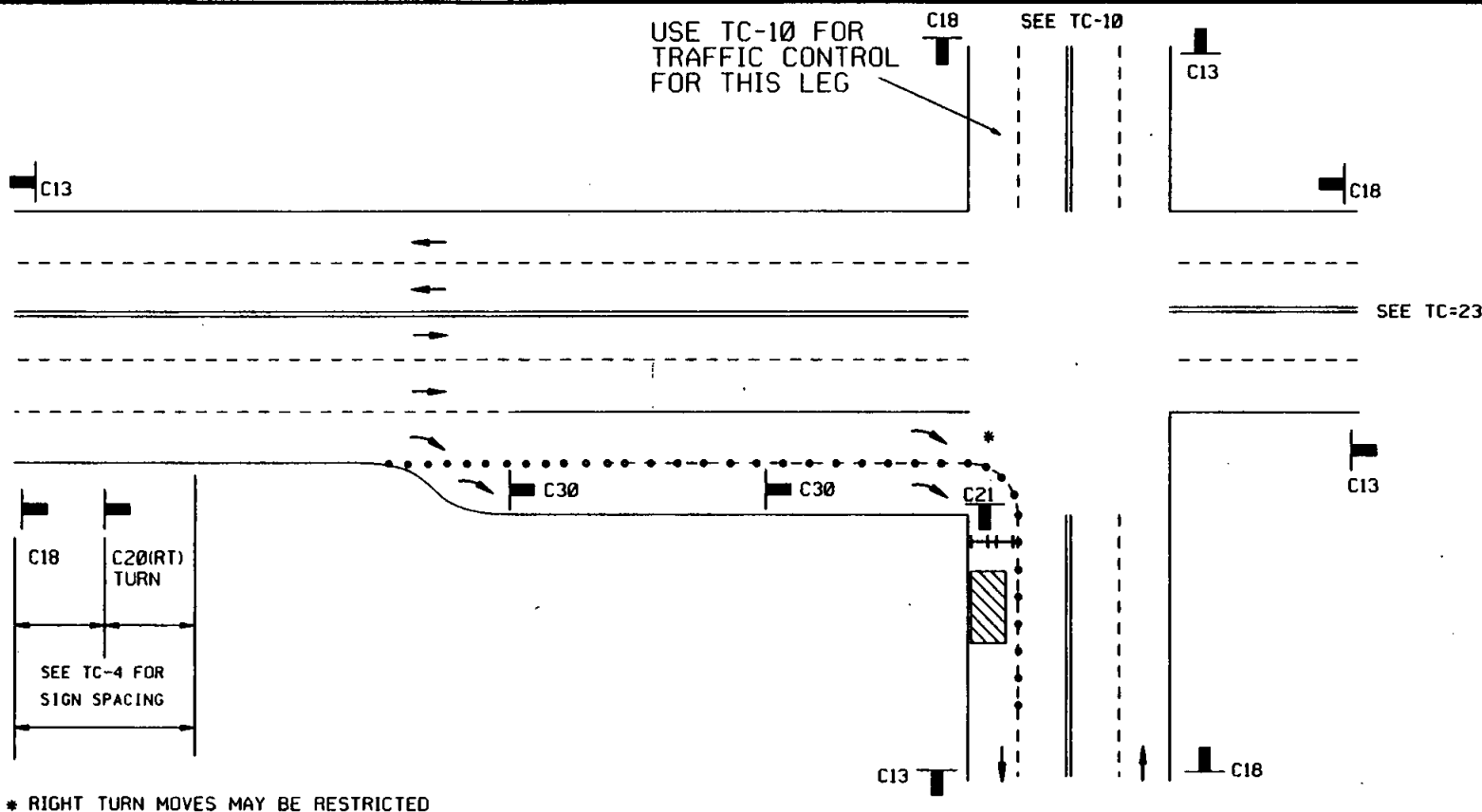
PHONE

AGENCY USE
APPLICANT USE

DRAWING
NUMBER TC-38

SIDE OF ROAD WORK AREA
RIGHT TURN INTERSECTION TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME

COMPANY

ADDRESS

PHONE

Revision
By
Date

008

1/10/95

1/10/95

1/10/95

1/10/95

1/10/95

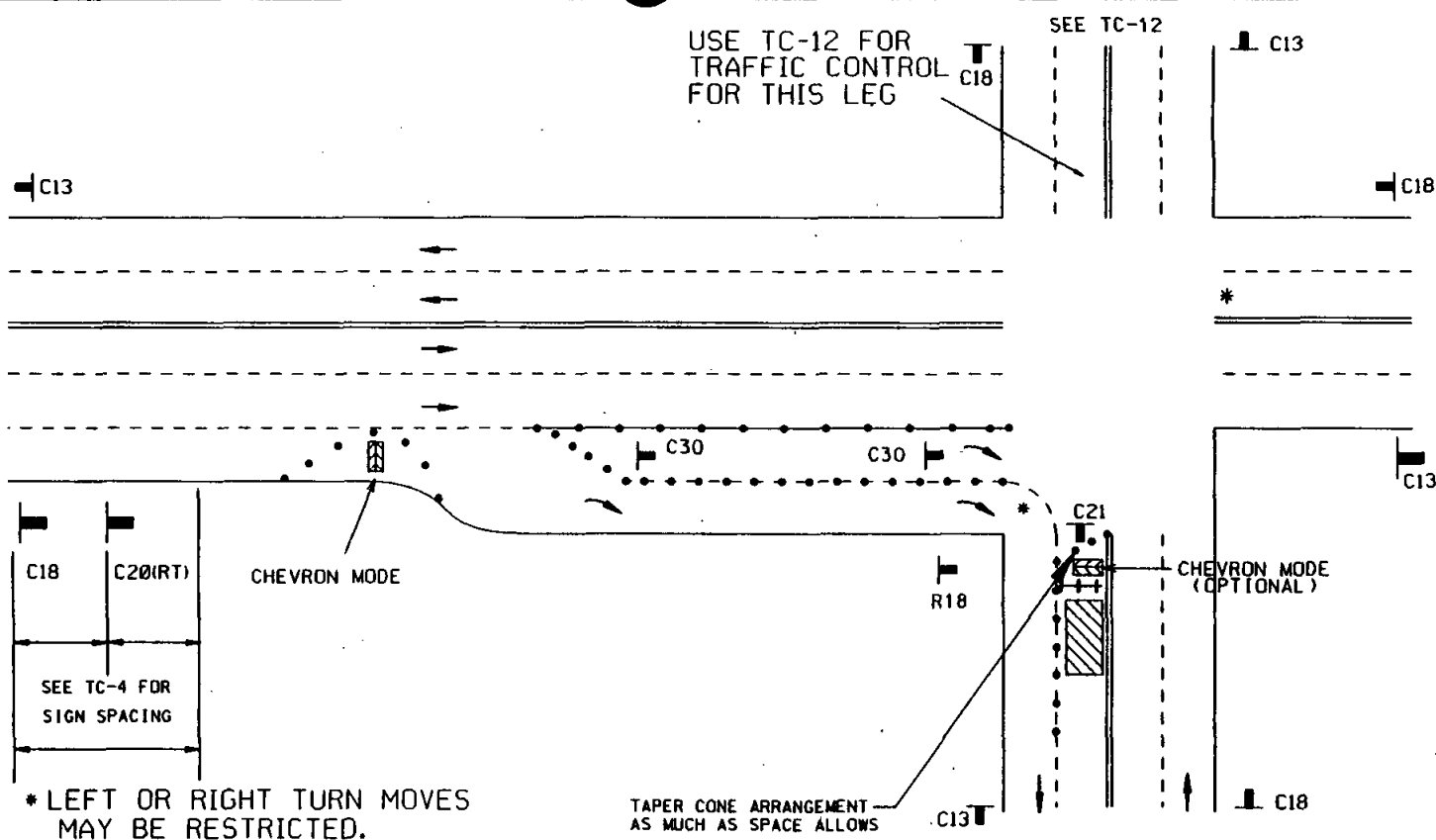
1/10/95

1/10/95

Revision	By	Approved	Date
DRAWING	TBO		5-31-94
	WJ		7-26-94
	DB		7-26-94
			9-15-95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA
RIGHT TURN INTERSECTION TRAFFIC CONTROL



LEGEND

- CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

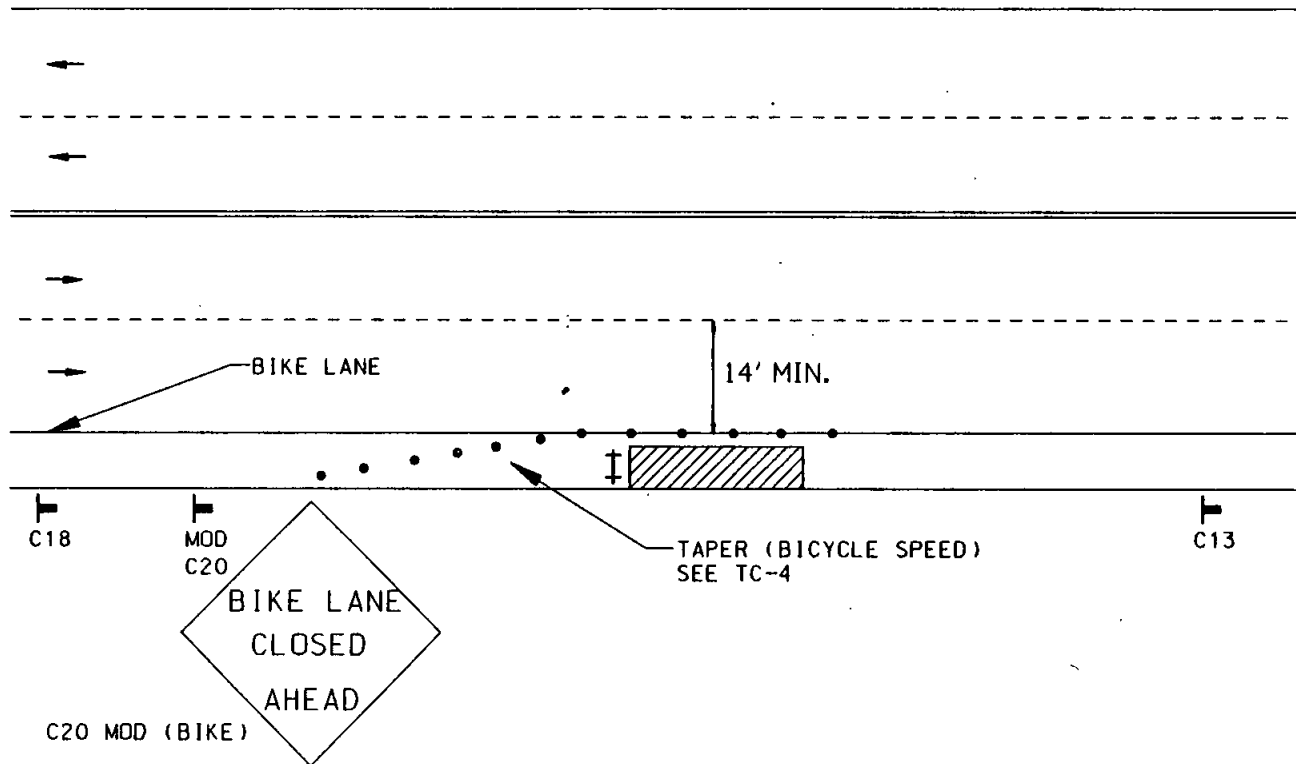
APPLICANT USE

DRAWING NUMBER TC-39

DRAWING
NUMBER TC-40

BIKE LANE CLOSURE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

Revision
DRAWING

By

Approved

Date

TRD

WAJ

DCB

9-26-94

1-23-95

9-15-95

AGENCY USE

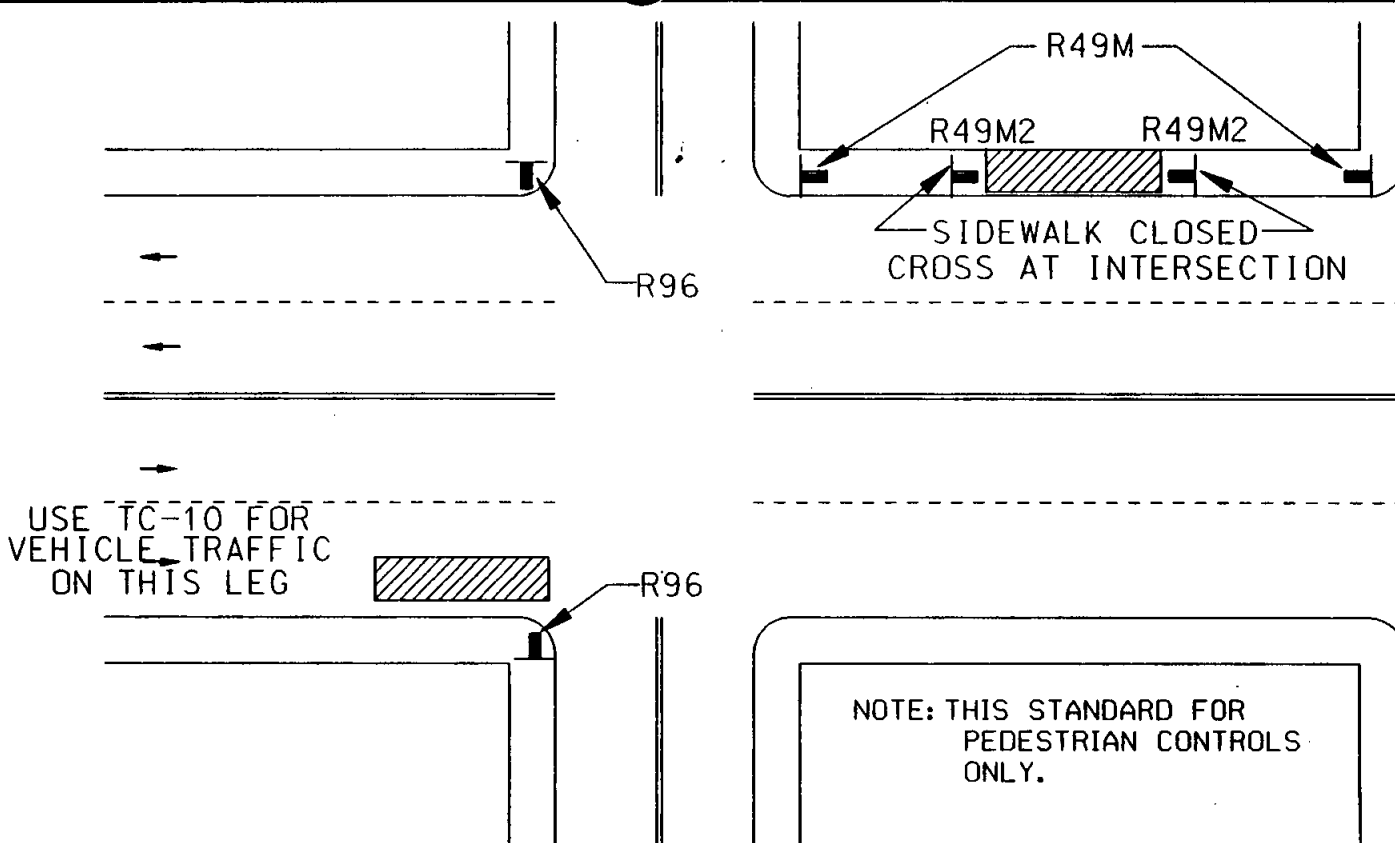
APPLICANT USE

Revision	By	Approved	Date
DRAWING	TRD		5-31-94
	WAV		5-26-94
			4-25-94
			9-15-95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA - TYPICAL PEDESTRIAN CONTROL SIGNS

DRAWING
NUMBER
TC-41



LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

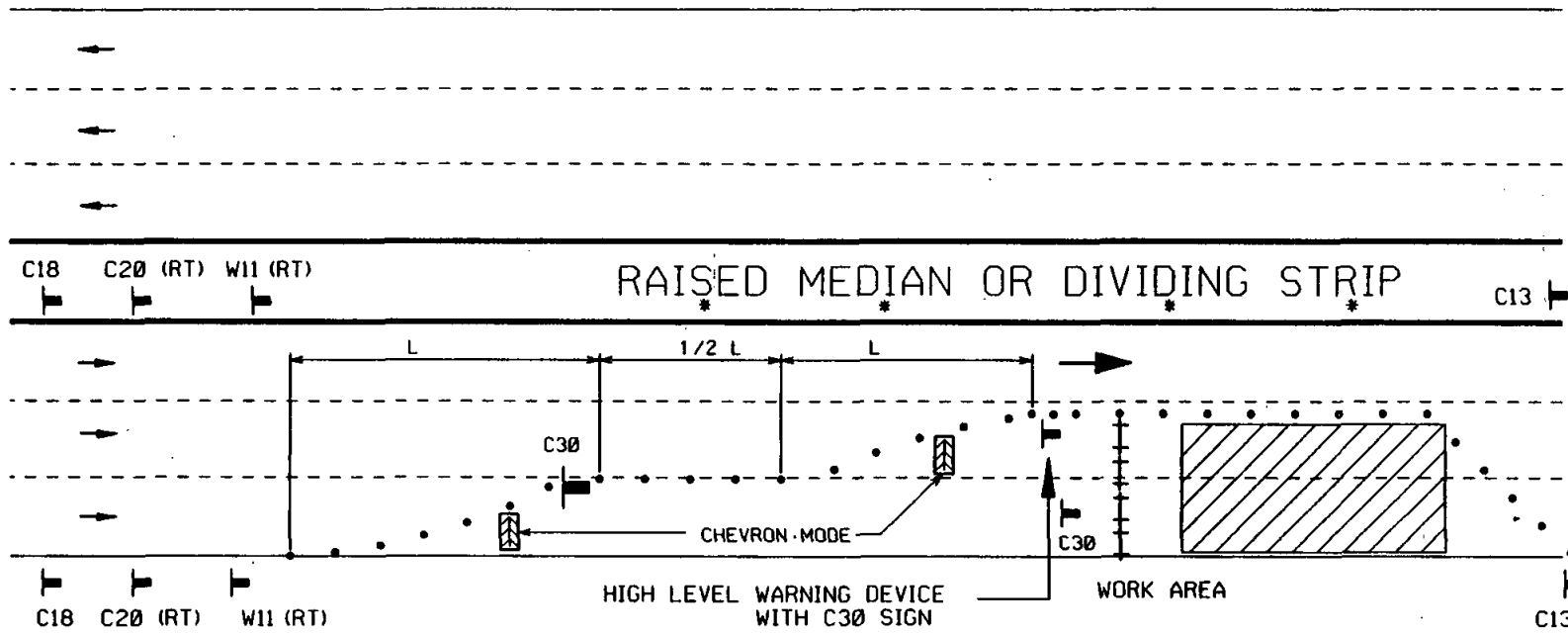
Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-42

SIDE OF ROAD WORK AREA
MULTILANE ROADWAY W/ RAISED MEDIAN

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



SIGN SPACING SEE TC-4
TABLE 1

TAPER SEE TC-4
TABLE 2

* MEDIAN MAY REQUIRE TEMPORARY PAVEMENT TO CONVEY TRAFFIC VOLUME.

LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME

COMPANY

ADDRESS

PHONE

Revision
By
Date

008

008

008

008

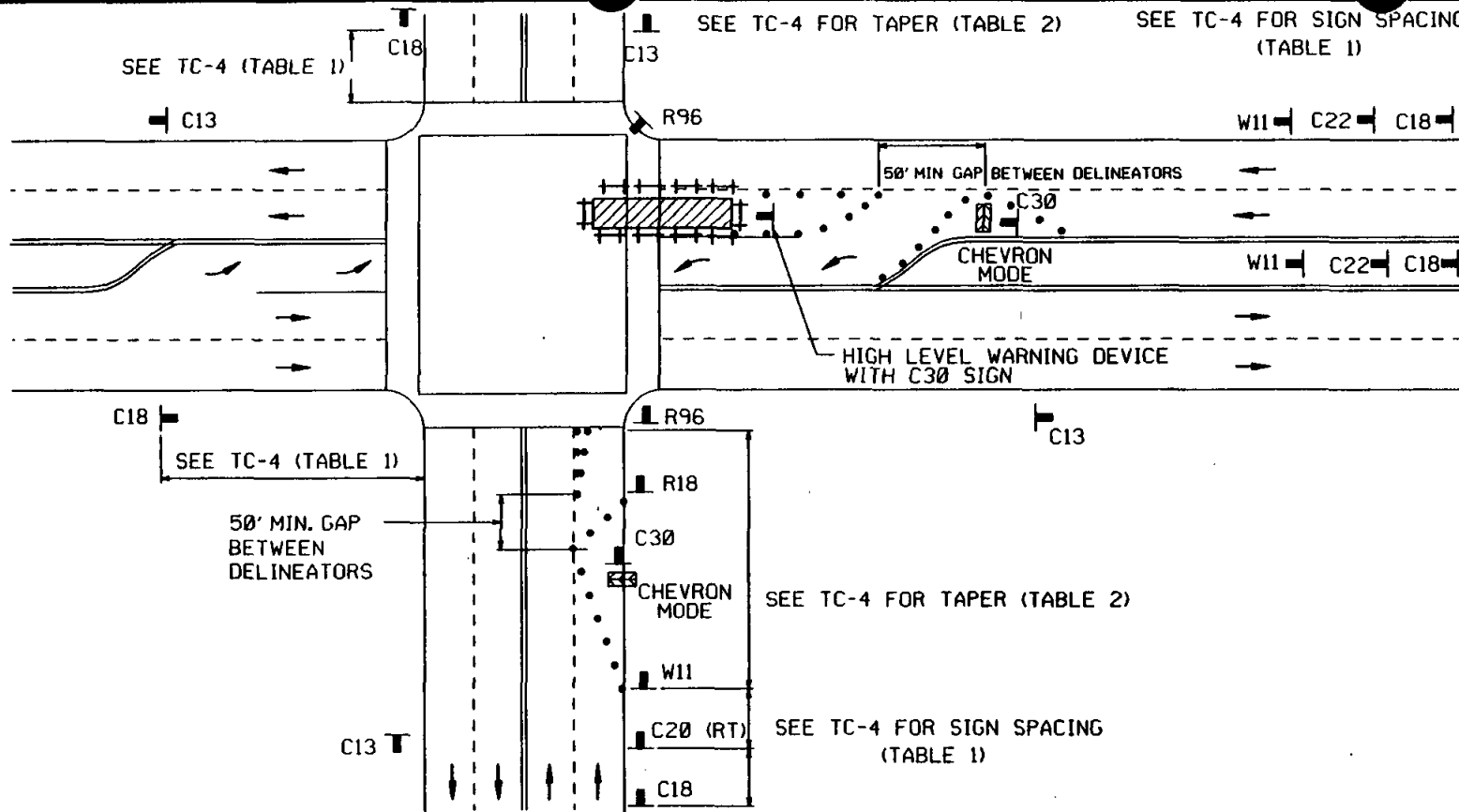
008

008

Revision	By	Approved	Date
DRAWING	TRD		6-18-94
008	TRD		9-25-94
			4-25-95
			9-15-95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
WORK WITHIN INTERSECTION
RIGHT LANE / LEFT LANE

DRAWING
NUMBER TC-43



LEGEND

• CONE ++ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

AGENCY USE

APPLICANT USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

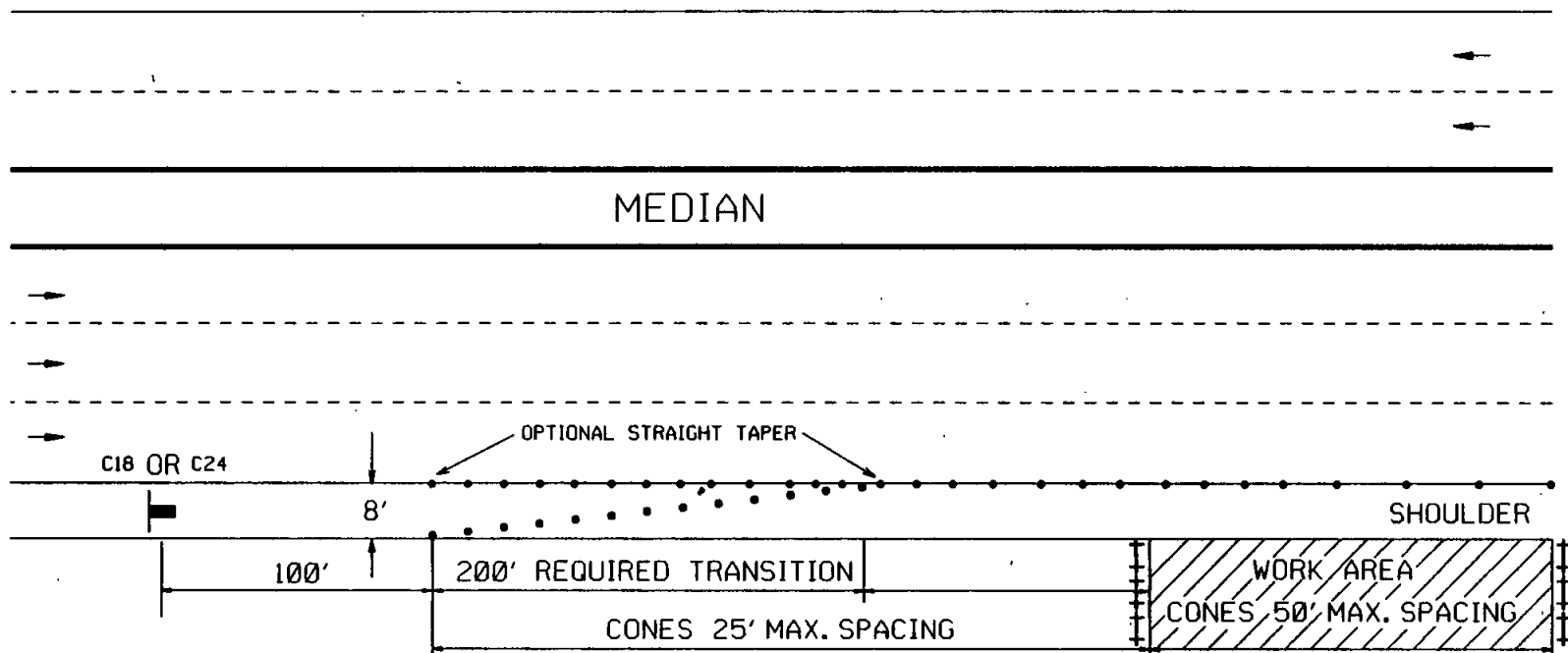
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Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-44

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
TYPICAL SHOULDER CLOSURE
MULTILANE ROADWAY
WITH RAISED MEDIAN



LEGEND

- CONE ⇄ BARRICADE ■ FLAGGER ▬ SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ⇄ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN, CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:
NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

Revision	By	Approved	Date
DRAWING	DW		4-91
ORIGINAL			
1	W		5-91
2	W		6-91

DRAWING
NUMBER TC-90

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
SPECIAL CONDITIONS WORK AREA
TWO LANE ROADWAY
WITHOUT CENTERLINE

LEGEND

● CONE ⇄ BARRICADE ■ FLAGGER ┐ SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ⇄ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

Revision	By	Approved	Date
DRAWING	DW		4-91
ORIG.	MAJ		10-8-91
			10-4-94

Revision	By	Approved	Date
DRAWING	DM		4-91
ORIG.	MAJ	<i>[Signature]</i>	10-8-91
		<i>[Signature]</i>	10-4-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
SPECIAL CONDITIONS WORK AREA
TWO LANE ROADWAY
WITH CENTERLINE

DRAWING
NUMBER
TC-91

LEGEND

CONE
 BARRICADE
 FLAGGER
 SIGN
 FLASHING ARROW SIGN
 WORK AREA
 TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
 AGENCY _____
 ADDRESS _____
 PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.


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TC-5 is required for all Traffic Control Plans.

Revision	By	Approved	Date
DRAWING	DEV		4-91
ORC.		<i>[Signature]</i>	10-8-91
	VAL	<i>[Signature]</i>	10-4-94



● CONE ↔ BARRICADE ■ FLAGGER ■ SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ➡ TRAFFIC DIRECTION

[illegible]

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

TC-5 is required for all Traffic Control Plans.

Revision	By	Approved	Date
DRAWING	DRW		4-91
ORIG.	MAJ	<i>HA</i>	10-8-91
		<i>HA</i>	10-4-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SPECIAL CONDITIONS WORK AREA
 TWO LANE ROADWAY
 WITH TWO WAY LEFT TURN LANE

DRAWING NUMBER
TC-93

LEGEND

- CONE ⇄ BARRICADE █ FLAGGER ┐ SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ⇄ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying, changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

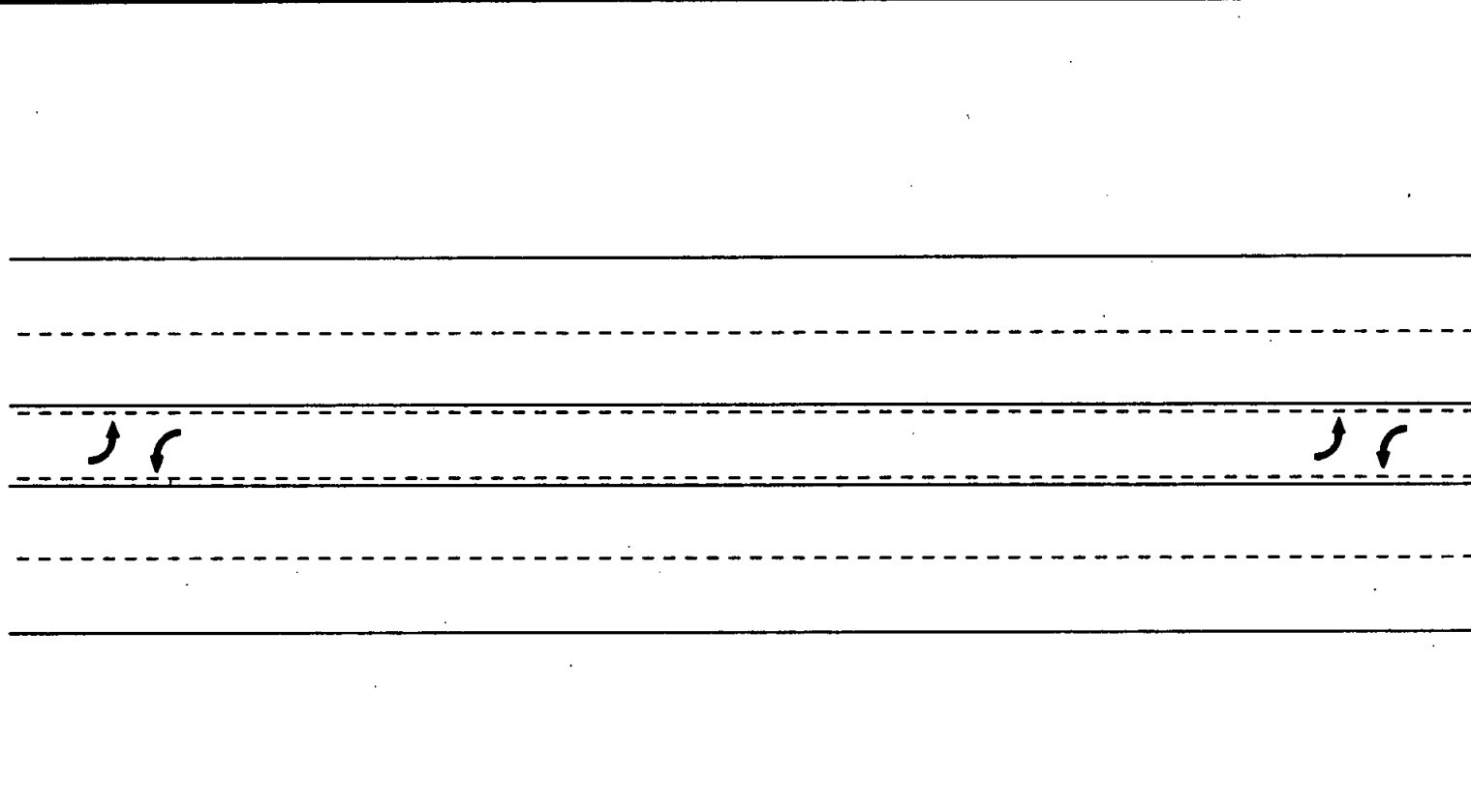
AGENCY _____

ADDRESS _____

PHONE _____

DRAWING
NUMBER TC-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
SPECIAL CONDITIONS WORK AREA
MULTILANE ROADWAY
WITH TWO WAY LEFT TURN LANE



LEGEND

● CONE ⇄ BARRICADE ▣ FLAGGER ▣ SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ⇄ TRAFFIC DIRECTION

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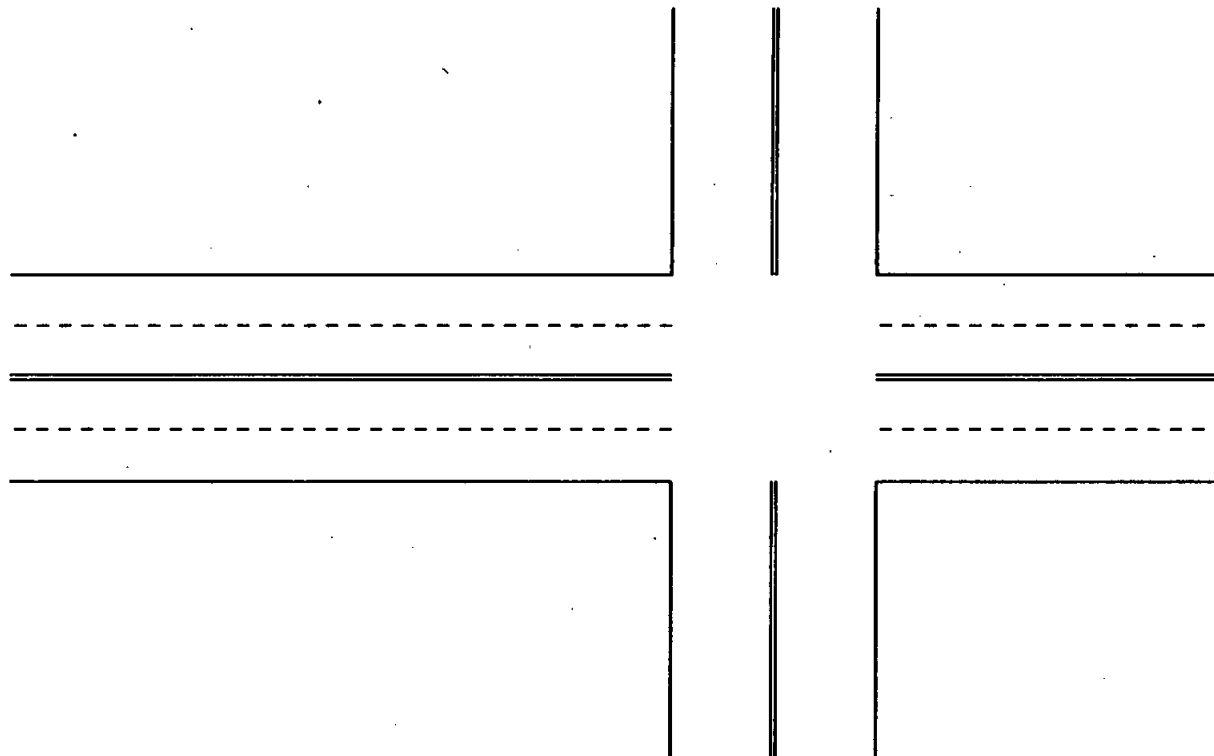
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DRAWING BY 10-8-91
ORG. VAL 10-8-94

Revision DRAWING ORG. DATE BY APPROVED DATE	10-8-91 10-4-94 H. J. [Signature] H. J. [Signature]	<div style="text-align: center; padding: 20px;"> <p>RAISED MEDIAN</p> </div>										
APPENDIX "A" SAN DIEGO REGIONAL STANDARD SPECIAL CONDITIONS WORK AREA MULTILANE ROADWAY WITH RAISED MEDIAN		<div style="text-align: center; padding: 10px;"> LEGEND </div> <div style="display: flex; justify-content: space-around; align-items: center;"> ● CONE ↔ BARRICADE ▣ FLAGGER ▬ SIGN ◻ FLASHING ARROW SIGN ▨ WORK AREA ➡ TRAFFIC DIRECTION </div>										
<div style="text-align: center; padding: 5px;"> TRAFFIC ENGINEERS COMMENTS </div> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">POSTED SPEED LIMIT</th> <th style="width: 15%;">APPROACH SPEED</th> <th style="width: 15%;">TAPER LENGTH</th> <th style="width: 15%;">SPACING OF CONES</th> <th style="width: 15%;">SIGN SPACING</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table> <div style="text-align: center; padding: 10px;"> GENERAL NOTES </div> <p>For hours of darkness, change cones to vertical barricades with steady burn lights.</p> <p>This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.</p> <p>This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.</p> <p>Nothing contained on this drawing shall prevent local jurisdictions from modifying, changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.</p> <p>TC-5 is required for all Traffic Control Plans.</p>	POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING					
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SUBMITTED BY: NAME _____ AGENCY _____ ADDRESS _____ PHONE _____		<div style="text-align: right; padding-right: 20px;"> SEE TC-4 FOR SIGN AND CONE SPACING AND TAPER LENGTH </div>										
DRAWING NUMBER TC-95												

DRAWING
NUMBER TC-96

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
SPECIAL CONDITIONS WORK AREA
INTERSECTION



LEGEND

● CONE ⚡ BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ↔ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
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AGENCY _____
ADDRESS _____
PHONE _____

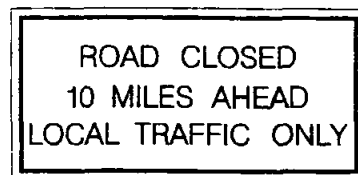
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ORIG.			10-8-91
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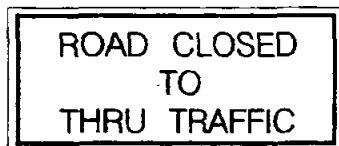
C1



C2



C3



C3A



C5 (RT)



C5 (LT)



C7



C9A



C12



C13



C14



C18



C19



C20 (RT)



C20 (LT)

Revision	By	Approved	Date
DRAWING	TRD		6-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

TYPICAL CONSTRUCTION SIGNS

DRAWING NUMBER TC-97



C21



C23



C24



C27

C28A
FLAGGER
PADDLEC28B
FLAGGER
PADDLE

C30



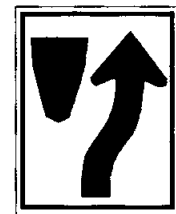
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C36



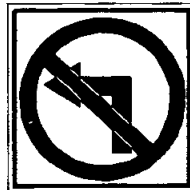
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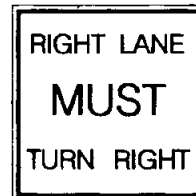
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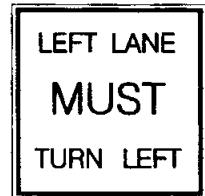
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R17



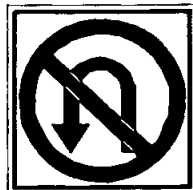
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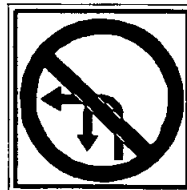
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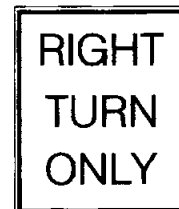
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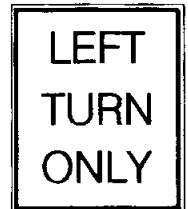
R34



R34-2



R41



R42

Revision	By	Approved	Date
DRAWING	TRD		9-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

TYPICAL CONSTRUCTION SIGNS

DRAWING
NUMBER TC-98



R49M



R96



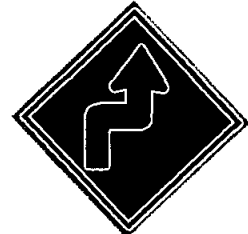
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W1 (RT)



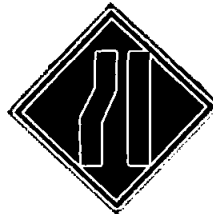
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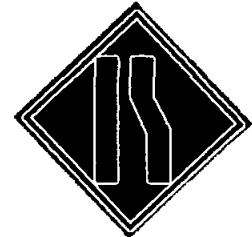
W2 (RT)



W2 (LT)



W11 (LT)



W11 (RT)

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APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

TYPICAL CONSTRUCTION SIGNS

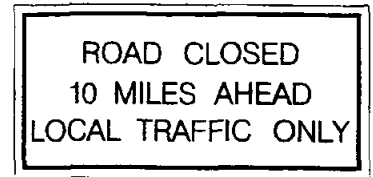
DRAWING NUMBER TC-99



C1



C2



C3



C3A



C5 (RT)



C5 (LT)



C7



C9A



C12



C13



C14



C18



C19



C20 (RT)



C20 (LT)

Revision	By	Approved	Date
DRAWING	TRD		6-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

TYPICAL CONSTRUCTION SIGNS

DRAWING NUMBER TC-97



C21



C23



C24



C27



C28A
FLAGGER
PADDLE



C28B
FLAGGER
PADDLE



C30



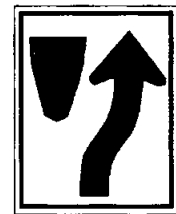
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C36



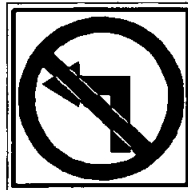
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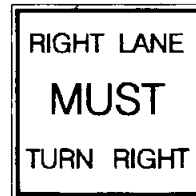
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R16



R17



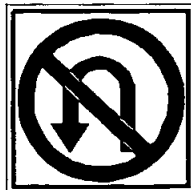
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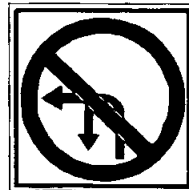
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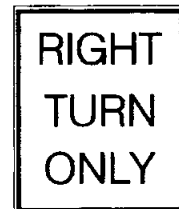
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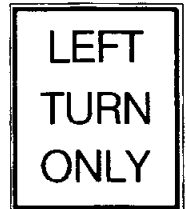
R34



R34-2



R41



R42

Revision	By	Approved	Date
DRAWING	TRD		9-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

TYPICAL CONSTRUCTION SIGNS

DRAWING
NUMBER TC-98



R49M



R96



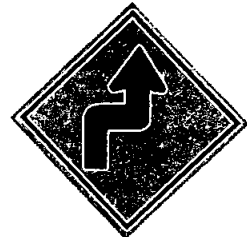
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W1 (RT)



W1 (LT)



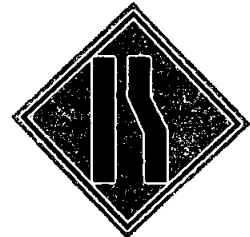
W2 (RT)



W2 (LT)



W11 (LT)



W11 (RT)

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APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

TYPICAL CONSTRUCTION SIGNS

DRAWING NUMBER TC-99

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